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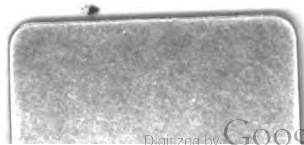
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NAUTICAL MAGAZINE,
1875.

THE
NAUTICAL MAGAZINE

FOR 1875.

NEW SERIES.

A JOURNAL OF PAPERS

ON SUBJECTS CONNECTED WITH

MARITIME AFFAIRS.

"THE SEAS BUT JOIN THE NATIONS THEY DIVIDE."

VOLUME XLIV.



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THE
NAUTICAL MAGAZINE.

VOLUME XLIV.—No. I.

JANUARY, 1875.

OUR ANNUAL ADDRESS.

IN presenting our annual address to our readers, we have to state that, this day, the old *Nautical* enters on the forty-fourth year of its existence. With its age, it is to us satisfactory to be in a position also to state that its use and circulation have concurrently increased.

In addition to the dissemination of our views on political economy, we may remind our readers that one of the chief objects for which our *Magazine* was incorporated is the diffusion of trustworthy information affecting safe navigation. The care with which our hydrographic notices, and other official information are compiled, will, we think, render any observation on our part superfluous. The necessity for encouraging useful inventions, as aids to navigation, has not been, and will not be, lost sight of, for we quite recognise the value of a medium like the *Nautical Magazine* for making such things known for the benefit of the world at large.

With every confidence we once again appeal for continued support from the community which has already supported us so well.

We have, as our readers well know, never found ourselves able to plunge into the stream of popularity, but have held our own views, founding them as we believed on truth and justice, totally regardless whether the masses accepted them or not, so long as we have been persuaded that the thinking part of the community, interested in ships and shipping, has supported us. There is no doubt that had we floated with the stream of popular sentiment, and been carried away with the tide of enthusiasm, we might have drifted into a course of policy which would

have pleased the masses better than the one we have pursued ; but the fact has always been kept before us that mere popularity is inevitably associated with a departure from sound principle, and we have preferred the prospective satisfaction which comes from advocating solid truths, in preference to the applause of the general public for taking up the cause of blind enthusiasm.

In the articles which have appeared in our pages, we have always endeavoured to present views that in themselves are likely to tend to the public good ; at times our articles have been misunderstood and misappreciated, but that they were nevertheless right and were wholly in the direction of personal responsibility and in the spirit of our British national character, the only direction in which thoroughly English literature ought to be written, subsequent events and subsequent legislation have fully proved. In the full belief that our policy is sound, we shall continue to exert our influence against the assumption by the State of the rights, duties, and responsibilities of the individual, while we shall at the same time endeavour to prove that the commerce of Britain, as well as the safety of the individual, are only to be upheld and secured by holding every shipowner, master, and seaman, responsible for such of his personal acts as may tend to jeopardise the one or the other.

SEA RISK.

THE extent to which carriers ought to be held accountable for the safety of property while in their possession, has always been a question of great importance and is now especially so, as the carrying trade has attained great proportions and is becoming daily more extensive. Still, much misconception seems to prevail as to how far carriers' liability in general extends ; and much difference of opinion exists whether their responsibility should be increased or diminished ; a misconception and difference of view exists, probably due to the fact, that the different conditions under which the various branches of the carrying trade are conducted, are not invariably distinguished : and, consequently, it is not always perceived, that what may be reasonable in one case, is not necessarily so in another.

Now, although the term "carrier" is a comprehensive one, and includes a number of persons differing widely as to the manner of conducting, and as to the extent of, their trade ; yet (in this country at least) two classes of carriers practically divide this business between them, and therefore

“liability questions” of any moment may be said to affect them only, and these carriers are shipowners and railway companies. Laying aside then the consideration of all other carriers, the several positions of these two classes will be examined, and in the following way.

An account will be given of the manner in which the Legislature has respectively acted towards shipowners, and railway companies, and a statement will be made showing what the laws regarding carriage by sea and carriage by rail actually are. The peculiar position occupied by shipowners will be shown, that it is different from that in which any other carrier is placed, and that for this reason they have obtained a certain amount of protection, and are not hindered from protecting themselves against claims for which they would be otherwise liable; and then, the reasonableness of this being admitted, it will fairly follow that a railway company, being authorised by law to own ships, should have the shipowners rights and immunities, and that it is unjust, and contrary to common sense to hold a railway company employing a shipowner and acting as an agent or shipbroker for the owner of the traffic, liable for the damage which may happen to it while in the hands of the shipowner, and for which the shipowner is not accountable.

Before proceeding, a distinction not always remembered must be pointed out, and that is the common law distinction between a “common” and a “private” carrier, the former being one whose professed or recognised occupation is that of a carrier, and who as such is bound to carry, and to carry safely, the property tendered to him. Loss caused by the act of God and the King’s enemies only excepted. The latter is one who carries on an occasion if he pleases, and, consequently, on his own terms, his own gross negligence or fault excepted. But the common carrier, unless debarred by special legislation, is not precluded from giving a notice disclaiming liability, and, by so doing, placing himself in the position of a private, or special carrier for hire. Thus, a common carrier who, before he accepts goods from their owner, gives him a notice disclaiming liability in respect to them, which notice is not repudiated, becomes, in regard to these particular goods, a private carrier for hire. This difference is important, and it follows that, as a shipowner is a common carrier, he can avail himself of the special carrier’s right, no statutory provision to the contrary existing.

From a comparatively remote period, the intimate connexion between the prosperity of the shipping trade and that of the country, has been recognised; nevertheless, until the early part of the last century, shipowners, as common carriers, were, in event of accident, liable without any limitation either to the shipper of goods or to any person suffering loss from some cause traceable to the shipowner. An Act was then passed which, after reciting the great consequence and importance of

promoting the increase in the number of ships, and preventing discouragement to merchants interested in them, provided, that no shipowner should be liable for loss "by reason of any embezzlement by the master or mariners" of any merchandize put on board the vessel, "or for any damages or forfeiture done or incurred by the master or mariners" without the shipowner's privity of knowledge, further than the value of the ship, all her appurtenances, and the full amount of the freight to grow due for and during the voyage. The law remained unaltered until the year 1786, when by an Act the preamble of which gave similar reasons to those stated in the former Act, why a change in the law was required, and recited in addition that discouragement to persons from being interested in ships was likely to happen on account of the responsibility to which they are exposed, notwithstanding the "salutary intention" of the former Act. It was accordingly established that shipowners were not to be held liable for any loss by robbery of merchandize shipped on board their vessels, or for damages or forfeiture, provided such were done or incurred without the owner's connivance, further than the value of the ship, her appurtenances and freight. This Act provided that shipowners were not to be liable for damage done to goods by fire, nor for loss of gold, silver, jewels, &c., unless their value was declared at the time of shipment and additional freight paid. These Acts were amended by an Act passed in 1813, which limited a shipowner's liability for all loss or damage caused by any Act or neglect (the owner's excepted) to merchandize on board his ship, or to any other ship and its cargo, to the value of the ship causing the loss and her freight for the voyage. No further alteration took place until 1854, when, by the Merchant Shipping Act, the former Acts were repealed, and the shipowners total immunity from liability for damages arising from fire, or from robbery of valuables, the value not having been declared, was confirmed, and in event of liability for loss of life or personal injury to a person, or loss of or damage to merchandize carried in his ship, or loss of life, or personal injury to a person, or loss of or damage to merchandize carried in another ship, the damages incurred were not to exceed in amount the value of the ship in fault, provided, however, that in no case should the ship's value, when loss of life or personal injury occurred, be taken at less than £15 per registered ton. An amending Act was passed some years subsequently which fixes this liability at £15 per ton if loss of life or personal injury occurs either alone or together with loss of merchandize, and if loss of life does not occur, to a maximum of £8 per ton of the ship's registered tonnage, and this is the present state of the law. But the shipowner's right of receiving traffic for carriage on their own terms, and so freeing themselves from all liability in connexion with it, has not been in any way interfered with.

Having thus stated how shipowners are circumstanced as to liability, the position of railway carriers will be considered. The first Act affecting them, although not passed with that intention, but now held to affect them in their capacity of common carriers, is that known as the Carriers' Act, which frees common carriers from liability for loss of packages containing gold, silver, or valuable articles above the value of £10, unless their value is declared at the time of delivery, and an additional freight paid. In case, however, the loss is proved to have arisen through the felonious act of the carriers' servants no protection is afforded, and the carrier is held liable.

Until the year 1854, railway companies appear to have been viewed in regard to liability, as any other land carrier. The Railway Companies Consolidation Act expressly stated that railway companies were not to be held liable to a greater extent than common carriers, but should be entitled to the benefit of every protection and privilege that the latter had. In the year above referred to the Railway and Canal Traffic Act was passed, and by the seventh section railway companies were made liable for any loss of, or injury done to, any traffic carried by them, and caused by the company's or their servants' neglect or default, and all notices and conditions given by the company to limit such liability were declared void. This section, however, allowed companies to make any other conditions as to forwarding of traffic that a court or judge before whom any question relating to such conditions may be decided should deem just and reasonable; it also confirmed the application of the Carriers' Act to railway companies; and further it declared that companies were not to be liable for damage done to live stock beyond a certain amount per head according to kind, unless the value was declared at the time of delivery, so as to allow an increased rate to be charged, and, lastly, it provided, that a special contract would not bind the party who delivered the goods unless it were signed by him.

Thus it appears that as regards their several liabilities a like course of legislation has not been adopted in dealing with the two chief classes of carriers—viz., shipowners and railway companies, or in other words liability as common carriers towards consignors of traffic, and liability as individuals towards individuals injured is not the same in the case of shipowners as it is in the case of railways. For the reason already stated, as well as for others to be given hereafter, all the statutes passed in reference to shipowners have either exempted them altogether as common carriers from liability for loss or injury to traffic carried in ships, or have fixed an aggregate amount of damages to be recoverable when liability attaches, but whilst conferring these advantages in exemption from and limitation of liability, the statutes have in no way interfered with the common law rights of shipowners of becoming special carriers,

and so freeing themselves from liability of every kind, excepting that arising from damage caused by their own personal act. On the other hand, railway companies, as common carriers, if the very equivocal relief afforded by the Carriers' Act be excepted, have not only obtained no such exemption or limitation, but also have been specially deprived of the unrestricted right of becoming special carriers by notice, and so limiting their liability; while as to loss or injury caused by shipowners in carrying on their trade, to some person other than a consignor of traffic—as, for example, when one ship damages another—they can, in no case, be obliged to pay more than a stated amount. It need hardly be said no such interference has ever been exercised in regard to a railway company, who, if they injure another company, or person, are liable in damages without any statutable limitation.

Now, if the principles on which these various statutes have been enacted are considered, the reasonableness of affording protection to shipowners will be readily admitted. For, although the proximate object of the immunities granted to shipowners was to benefit them and make their trade profitable, the ulterior and main object was to benefit the whole community, by inducing persons to undertake a hazardous trade, without which commerce would cease altogether (for it cannot be called commerce where members of a State supply their own wants, and neither receive or give to foreign countries, a position in which islanders must necessarily be, unless they possess the means of water-carriage); and just as the workers in any dangerous employment receive higher pay than those whose occupation is otherwise, so as carrying by water involves greater risk than carrying by land, the position of shipowners must be equalized with that of land carriers by giving the former some special protection, without which solvent people would hesitate to become shipowners at all, for the dangers to be encountered at sea are very great and such as cannot with certainty be guarded against, and while on this account the probability of loss is greater than can ever be the case during a land transit, the quantity of property endangered is also much greater, so that were shipowners made liable for the results of disasters at sea their losses would be far heavier than those resulting from accidents on land. Shipowners, moreover, are at a disadvantage in being unable to exercise constant supervision over their ships and servants, for although they may send the former to sea in perfect order and exercise the greatest care in the selection of the latter, so soon as the voyage commences there is no further opportunity for supervision, and whatever loss or damage may arise is out of the shipowner's power to prevent; lastly, shipowners are free traders, trading without interfering in the slightest degree with the person or property of any, and as every one may own ships without limit as to number and carry goods at any freight, it is

clear that a shipowner may have to contend, and in the majority of cases does contend, with numerous competitors.

Exercising then this right which they undoubtedly possess, as recent decisions prove, of receiving traffic on their own terms, shipowners commonly embody in their bills of lading conditions freeing themselves from liability in relation to the goods named in such bills. Among these conditions are exemptions not only against liability for loss caused by the mistakes in navigation or negligence of the master and crew, but against that caused by their criminal negligence—viz., barratry.

While these rights of the shipowner cannot be denied, some persons may be disposed to contend that shipowners ought to be liable unconditionally for losses at sea, such persons arguing that it is plainly unjust for senders of traffic to lose their property and have no remedy against the shipowners in whose charge it had been placed. This objection is unsound and could not be made when it is once clearly seen that carrying involves two things—trouble, and risk, and that payment for the former does not necessarily involve payment for the latter, and one may be undertaken, the other not. To quote a recent work on the subject, "Insurance may be a trade just as carrying is, and these two trades may be conjoined or combined either by the will of the individual or by the force of the common law. When by the force of the common law these two trades are necessarily associated, the carrier has evidently a perfect right to his remuneration for both, he is entitled to be paid for carrying the goods which cannot be done without time, trouble and expense, and he is entitled to ask an amount which will enable him to make good the losses of his customers' goods, when any such loss occurs."

Now we have seen that these trades are not necessarily associated in shipowners by the force of the common law, although sometimes they are by choice, as some shipowners offer to effect insurance on the goods carried if an extra payment beyond the freight is made for the risk; consequently, a consignor who has paid only the freight for the carriage of his goods by sea has paid for nothing more than for the trouble their carriage will involve, and nothing whatever in consideration of the risk; if then he allows these goods to encounter the risks of the sea without covering them by a policy of insurance, he voluntarily takes these risks on himself in order to save the payment of the premium, whether wisely or not, he himself decides, and having decided he has no more reason or right to complain, if the goods are damaged or lost, than the insurance office when called to pay the value of the goods insured. In reality persons who say that shipowners should be liable unconditionally would claim something for which they did not contract, and having paid the shipowner for carriage only would seek to make him liable for risk which he was not paid to undertake. If a person is thought imprudent who

neglects to insure his house and property against fire—the only contingency likely to occur on shore involving total or extensive loss, similar to the many likely to arise at sea—how much more imprudent ought he to be thought if he exposes property to these latter contingencies without a similar precaution.

The several positions of shipowners and railway companies, in respect to liability having been explained, and an attempt having been made to show that the reasons why the law is not alike in its operation, are reasons not merely founded on a desire of giving one branch of the carrying trade an advantage over another, in order to encourage that branch, but as depending, in reality, on the nature of the circumstances under which carriage by sea and carriage by rail are respectively conducted. The position of railway companies, in relation to sea transit, will now be discussed; first, when they send in ships which they are authorised by special Acts to own and use; and, secondly, when not having such powers, they send traffic in ships belonging to independent shipowners.

While reasons have been assigned to prove the justice of protecting shipowners from certain claims, and of not preventing them from protecting themselves against claims made by shippers, no opinion has been expressed as to whether it is reasonable or otherwise; when, on the other hand, no limitation of liability has practically ever been granted to railway companies to hinder them from receiving traffic on their own terms, as to the land transit. The law is so, and there seems no probability of its being altered; but the reasonableness of the position of shipowners being admitted, there is no sufficient reason why, if railway companies receive powers from Parliament to own ships, they should not be allowed to do so on the same terms as other shipowners? Such companies being in the same position as to the sea transit, as any other shipowner, all the reasons why a shipowner is protected, and is allowed to protect himself, apply with equal force to railway companies in their shipowning capacity, so that, even were it contended that on account of an Act which extends the application of the Railway and Canal Traffic Act, 1854, to steamboats belonging to railway companies, and traffic conveyed on them, the conditions under which the traffic is carried by sea, must, as those under which it is carried by land, be proved to be just and reasonable, to the satisfaction of the Judge before whom any question arising out of such conditions shall be tried. They should, undoubtedly, be held so, because the mere circumstance that such shipowners are also a railway company, neither places them in a different position in regard to the sea and its risks from that of an ordinary shipowner, nor prevents the consignor or shipper from protecting himself against loss, by insuring his goods, as was shown he can, and ought to do, in the former instance. This opinion is supported by a recent case, where it

was held that whatever protection the Merchant Shipping Act, as to limitation of liability afford a shipowner, it gives a similar protection to railway companies, in regard to ships owned by them. In a word, the permission to a railway company to become shipowners, certainly gives them concurrently all a shipowner's rights and privileges.

Hard as it would be to debar railway companies, who own ships, from securing themselves from loss, as other shipowners do, it would be infinitely harder to hold a railway company, not owning ships, liable for damage occurring on the sea part of the transit, a part over which the railway company have no control whatever, they, like any shipper requiring sea carriage, employing a shipowner to convey the traffic across the sea, and thus being in the same position regarding him, whether in his capacity as a common or special carrier, as any of his employers are, and consequently unable to hold him responsible for loss or damage happening to the traffic while in his keeping.

The service rendered to the public by railway companies in providing transit across the sea for traffic, is usually done by through booking, or, in other words, when traffic to reach its destination must pass through the hands of more than one carrier, the sender contracting only with the carrier at the point of starting—a system which of late years has become general. This traffic is conveyed with a minimum of inconvenience, a single payment covering all charges, which payment is then divided among the respective carriers. It might be naturally supposed, by a person hearing for the first time of such an arrangement, that a higher freight would be charged in consideration of the convenience thus enjoyed by senders, and the extra trouble thus devolving on the carriers, but such is not the case, for the invariable rule in through booking arrangements is to charge less than the sum of the local rates for the several parts of the entire distance.

It would appear, then, unreasonable to consider a railway company, who being bound only to send traffic to a seaport station, in addition undertakes to send it across the sea, so taking extra trouble and receiving less remuneration than had the freight to the seaport only been paid, liable for what may occur on the sea-passage—in other words, that they should be debarred from giving to consignors of goods sending at through rates a binding notice disclaiming liability for damage or loss happening on the voyage, similar to that which shipowners give their own consignors. However one-sided as to most reasonable minds such a view must seem, it is an opinion held by some who contend that certain sections contained in recent Acts of Parliament have this effect; railway companies, at the instance of some of whom these sections were inserted, holding, it need hardly be said, a directly contrary view. Which opinion is correct, or will be held to be law when

a case bearing on this question is decided, will not here be considered. But independently of what the strict legal construction of some words in these Acts will be, any one admitting the fairness of the immunity that shipowners can have from liability for damages, or loss arising from various causes, in particular from the mistake or negligence of servants, must admit that there is even more reason why a railway company, having nothing to do with the conduct of the sea transit, should be free from all liability in connection with it, or at least be free to protect themselves by notice against all such liability; most just is it that those who render more service and receive less remuneration should do so on their own terms, and in particular be allowed to protect themselves from claims, the causes of which arise through the negligence of the servants of others.

All the reasons given in favour of a shipowner protecting himself against loss arising from any causes, inclusive of his servants' acts, apply with greater force in favour of a railway company booking traffic at through rates to be sent by sea, for everything is beyond their control so soon as the traffic is put on board the vessel; and this cause referred to, which some declare railway companies can in no case protect themselves against, is that by which accidents at sea and consequent damages most frequently arise—viz., the alleged negligence or mistake of the master or other servants of the shipowner.

Now, it is obviously unjust and unreasonable to hold one individual responsible for the acts of the servants of another, who is not himself responsible; for the reason why a man is held liable for injury arising from the acts of his servants is, "because he has chosen those servants, and if he has chosen those who are untrustworthy, while he held himself out to the public, by the fact of his business and employment as capable of choosing those that were trustworthy, he must suffer for it." Admitting, as most people will, the truth of this, it follows that it is unjust to make a railway company liable for the acts of a shipowner's servants over whom they exercise no authority or supervision whatever. Many persons, however, cannot see the injustice of this opinion, and bring forward, as an analogous case, that when a railway books through by land only, and a loss occurs on the part of the transit when the goods are in the hands of another company, the company receiving the goods must make good the loss to the consignor. The answer to this is, that the company not in fault has a remedy against the company that is, and can compel them to pay the amount claimed; while if the loss takes place on a voyage, the railway company has, as we have seen, no remedy against the owner of the vessel.

Briefly then, shipowners' exceptional position as carriers being granted, the reasonableness of the freedom from liability necessarily follows—

and as what is right for one shipowner is right for all shipowners—therefore, railway companies, when shipowners, should in respect to the sea be also free from liability. When shipowners then are not liable, brokers or agents, acting for owners of traffic, should not be liable either, this being the position of railway companies, forwarding traffic by sea at through rates ; there being in addition an independent reason why such railway companies should not be liable, because when in their capacity of agents or shipbrokers, they forward traffic at through rates, they voluntarily, and for the convenience of the public perform more service and receive less payment than had they taken it otherwise. It is apparent that a voluntary agent's unpaid services should not involve him in heavier responsibilities.

OUR COLONIES.—No. V.

THE TIMBERS OF OUR INDIAN POSSESSIONS AND AUSTRALASIA.

HAVING shown, in a former article, the value of the woods of our Possessions in the Western Continent and islands and Africa, the facts and observations we have now to furnish will serve to further demonstrate that England is principally indebted to its Colonies and Indian Empire for timbers of construction.

It is from India that we receive the valuable shipbuilding wood teak, of which our supplies were very short for some years, although the imports have, within the last year or two, been somewhat larger. So far back as 1839, Mr. Williams, dockyard manager, reported to the Bombay Government that in twenty-one months 40,000 teak trees, between twelve inches and six inches diameter, had been floated down by the contractors, who were allowed to cut trees indiscriminately, and that the supply of larger timber fit for shipbuilding was very scanty.

In 1878 we imported from Bengal and Burmah, 41,467 loads of teak, valued at £547,819. In the year ending March 31, 1872, the teak shipped from British India amounted to 42,459 loads or tons. The quantity, however, varies considerably year by year.

In India, the Government has lately begun to look after her valuable forests, but not until most of the teak and sal districts had become unproductive from reckless cutting. These two timbers, which, with oak and two others, rank No. 1 at Lloyd's for shipbuilding, are only found in our Indian Possessions, and an idea may be formed of the importance of forest conservation from the facts put forward in the report of Dr.

Brandis, Inspector-General of Forests in India, that the average of first-class teak trees found in a normal uncut forest at Beeling was fourteen per acre, while, over the entire area of Government teak forests, lately taken into management at Moulmein, 552 square miles in extent, the first class trees that were standing numbered only fifteen in ten acres, while stumps and damaged trees everywhere abound.

In Burmah the best teak-growing districts are Pegu, on the Irrawaddy and Sitang rivers, and in the Thoungyen valley, comprising 7,312 square miles of forest. Tenasserim and Martaban include 520 square miles of jungle on the Salween river banks. But even these forests are poor compared with the extensive tracts covered with teak to the north of the British boundary, especially on the feeders of the Sitang and Salween rivers, and some of the tributaries of the Meinam or Bangkok river. The trees also are, as a rule, much larger, and the shape of the stem more regular, in the forests of the Burmese Empire, the Siamese Kingdom, and the Karennee country. The tallest teak tree measured in Pegu was 106 feet high to the first branch. The strength and density of teak timber vary exceedingly, according to the locality where the tree is grown. The extremes observed in preliminary experiments were 40 and 50 lbs. per cubic foot, and 190 lbs. to 289 lbs. breaking weight. Teak when young grows very rapidly. Trees ten years old have usually a girth of eighteen inches, measured at six feet from the ground; at twenty-two years a girth of three feet is attained, but full-grown trees of nine feet in girth cannot be supposed to be less than 160 years old.

The forests of Pegu are divided into six divisions of over 1,000 square miles each, containing approximatively 100,000 first class trees in each division. The second, third, and fourth class trees each take twenty-four years to become first, second, and third class, respectively. Therefore, in each division, if one quarter of the 100,000 first class trees be cut every sixth year, taking the six divisions in rotation at 25,000 trees yearly from the divisions worked, the forest will have yielded all its mature timber in the twenty-four years required to bring on a fresh supply. In practice, 200,000 trees only are cut; some old trees being left for seed. It has been discovered by careful survey that the teak forests, though of a very scattered character, contain a certain quantity of trees of each class, generally 1,000 of first, second, and third each, and 200 of fourth class trees per square mile. Therefore, by cutting only eighty of the first class, and leaving twenty for seed bearers, as well as all the younger trees, which are protected from fires, as much as possible, in twenty-four years the forest is renewed, and in a rotation of 120 years, or the age of a first class tree, the stock is entirely replenished. Great quantities of teak are used on the western coast of the Indian Peninsula for shipbuilding. The Malabar teak is by common consent ranked higher for naval purposes than

Tenasserim or Pegu timber. The cause of its greater durability and power of resisting dry rot, appears to depend chiefly on its more oily or resinous quality, and the greater density arising from its slow growth on the sides of hills. The principal forest districts are those of Malabar, Canara, Travancore, and Goojerat on the western coast of the Peninsula of Hindostan.

In Central India, on the Nerbudda river, extensive sal or saul forests begin to take the place of teak, which does not occur further north than Jhansie. Along the whole sub-Himalayan range, up to 3,000 feet elevation, and in a belt ranging from five to twenty miles wide, at the foot of the hills, and over 1,500 miles long, dense forest is found. Wherever the soil is elevated and dry this is nearly pure sal forest. In Kumaon, Oude, and many other of the Nepal jungles, as many as seventy first class trees per acre have been found, besides young trees from seed, at 200 or 300 per acre, growing up with the old. Some idea may be formed of the sal trees growing in the Nepal hills from the fact that the ferry-boats used everywhere on the Gogra and other branches of the Ganges are formed of single logs hollowed out and floated down from Nepal, one of which holds ten to fifteen men with cattle and horses, costing £5 to £10 purchased from the Nepal boatmakers. The sal forests of Upper India might be shown (according to the report of Mr. Webber, of the Indian Forest Department) to be even in worse plight through reckless cutting and utter neglect. There were in 1830 probably 4,000 square miles of purely sal forests along the foot of the Himalayas, besides those in Central India, available to Government. The sal timber (*Shorea robusta*) is almost the only one found capable of standing the Indian climate for railway uses, yet now the East Indian railway has been obliged to import pine sleepers from Norway, sal being scarcely procurable. This wood is close grained and heavy, but does not appear to be very durable, and on that account is inferior to teak, but in strength it surpasses the latter and deserves to be considered the second best timber tree in India. The British sal forests may roughly be computed as follows:—

	Square miles.
Central Province	2,000
Kumaon and Gurhwal	600
Dehra-Doon and Binjore	400
Oude	250
Gorruckpore	300

Both sal and teak trees take 100 years to grow. There are some excellent coniferous woods found in the British hill provinces of Kumaon and Gurhwal and the Punjab Himalayas. The deodar (*Cedrus deodora*)

is found there of immense age and size, 40 feet girth and 250 feet high; its timber is nearly imperishable. The *Pinus longifolia* is the next tree of value in the Himalayas, as it occurs over all the lower hills covering an area of several thousand square miles. Its timber is equal to Norway pine, and it is proposed to use it for sleepers on the Indian railways, and experiments as to its lasting qualities, when impregnated with creosote, have been successful.

There is a splendid tree in Burmah which is called there pyimma, and in Bengal red jarrool, which is abundant throughout British Burmah, and found in Travancore and other parts. The wood is used more extensively than any other except teak for the fittings of boats, and sometimes for the hulls of canoes, and in Rangoon for the knees of ships; large quantities are also now employed for ordnance purposes.

The podack, or rosewood of the Tenasserim provinces is a very beautiful, hard, compact timber, closely resembling the Andaman wood.

We pass over CEYLON, which, although well timbered, and rich in some ornamental and fancy woods, exports but little timber.

The Colony of the STRAITS' SETTLEMENTS is very rich in wood. Singapore sent to the last Paris Exhibition seventy-one specimens of unnamed timbers from the Johore saw mills, and the island of Penang forty specimens.

Malacca and the Malay Peninsula also possess many useful woods, and some four or five command a market, at very high prices, for Madras. They are strong, solid, and very durable, being principally used for girders, rafters, joists, and timber for bridges, standing the sudden changes of the climate remarkably well. One, the marabow, is also used for furniture; it is not subject to dry rot, and, when well seasoned, is known to last nearly half a century. A wood called boonoot, which is tough, hard, crooked grained, and fibrous, is in general use for masts and spars of vessels.

Passing now to the great island continent of AUSTRALIA, and its adjacent islands of Tasmania and New Zealand, we find them enormously rich in valuable woods, suited for many purposes. The immense size of many of the Australian trees is a great element in their value. The want of large timber for shipbuilding and some other purposes is severely felt at the present time. Several of the northern Australian woods are admirably adapted for naval purposes, furnishing, among other things, some of the largest and toughest spars in the world.

Owing to the vast area of *Queensland*, and the diversity of its soil, climate, and altitude, there is a greater variety of indigenous trees than in the rest of the Australian Colonies, and, perhaps, more than can be found within a similar extent of country in any other part of the world. The value of several descriptions of the Australian eucalypti for building

or railway purposes, has for some time past been fully recognised, and the number of species is stated to be greater in Queensland than in other parts of the continent. The case is the same with other woods, the variety of which is very great, that are remarkable for their strength, durability, fineness of grain, or ornamental appearance. In the neighbourhood of Rockhampton alone, there are nearly 200 different species of woods available for every purpose, from cabinet work to shipbuilding, several of which, as the eucalypts, or gums, surpass all other known timber in strength and durability, and as these constitute the main bulk of vegetation in the open forest, the supply is inexhaustible. It is impossible to state at the present period the price for which all the Queensland timbers can be placed in the market. The cost, free on board ship, is not great, as most of the valuable woods grow on the coast or the banks of the rivers, or are found within reach of the facilities for transport provided by railway communication. A few of the principal timber trees of Queensland may be specified, especially the coniferous ones. The majestic Moreton Bay pine is, without exception, the most useful and ornamental. It covers immense tracts of land along the coast and in the interior, and overtops all other trees, whether growing on the alluvial banks near rivers, or upon the steep and rugged mountains in the interior. This timber is an article of great commercial importance, and is used extensively in the Colony. It is strong and durable if kept dry. When procured from the mountains in the interior, it is fine grained, and susceptible of a high polish, which excels that of satin-wood or bird's-eye maple. Some trees yield as much as 10,000 feet of saleable timber. Spars for ships may be obtained in any quantity from 80 to 100 feet in length; in some instances, the tree attains a height of, at least, 150 feet, and from four to five feet in diameter.

The *Flindersias* are fine large trees of very general occurrence in the bush forests on the banks of the rivers in the northern districts, attaining a height of upwards of 100 feet; stem, 24 to 30 inches in diameter. There are several species, one with a dark yellow wood is of great beauty and suitable for the finest cabinet-work. They are, botanically speaking, true cedars—that is, having characters in common with the red cedar; the timber of which is an article of great commercial importance, and extensively exported to other colonies.

The wood of the cypress pine is durable, fine grained, fragrant, and capable of a high polish. It is used for piles of wharves and for sheathing punts and boats, as it resists the attacks of white ants. The root is valued by cabinetmakers for veneering purposes. The cypress pine is now receiving the attention it deserves from the timber merchant.

The iron-bark eucalyptus supplies timber of the highest reputation

for strength and durability, and is very much used for large beams in building stores for heavy goods, railway bridges, sleepers, and other purposes where great strength is required. The iron-barks are generally admitted to be the strongest and most durable of known timbers; they are very much employed in fencing and building, and will stand undecayed in the ground for several years.

The cedar species are superb timber producers, yielding the finest wood for cabinet work, the darker kinds being almost equal to mahogany, and taking an exquisite polish. The older the timber the finer the grain and the darker the veins. This is the favourite wood of the cabinet-makers and house carpenters of the luxurious East. It is generally known as toon wood, and is very remarkable for its lightness, being only a little more heavy than deal, unless of the scarce mountain species, when its density increases, as its beauty also.

The pencil cedar resembles the red cedar; it is used for building purposes, works easily, and is durable. In very old specimens the wood has a beautiful wavy appearance, and is suitable for the finest cabinet purposes. The colour and quality is not unlike the juniper used for black-lead pencils—hence the name.

Rosewood is very durable, prettily grained, of a red colour, and takes a good polish. The common name has been given to it from the similarity of the odour of the wood to the scent of the rose. This wood has been cut on the Clarence for planking the sides of vessels, and found to be very suitable for this purpose.

Some of the Australian woods for furniture veneers are admirable, having mottled and tortoiseshell-like grain, durability, susceptibility of high polish, and fine aromatic scent. Nothing can exceed the exquisite silky grain of blackwood, the rich wavy pattern of musk, the speckled beauty of the huon pine, the gay zebra-like stripe of tulip wood, or the wine-coloured jarrah (the so-called mahogany) of Western Australia. The lustre and tint of some of these woods when polished are unrivalled.

It may be interesting to mention that the very first export of the present Colony of VICTORIA, as far back as 1808, was timber. H.M.S. *Calcutta*, one of the two vessels that took out the party which endeavoured to form a settlement on Point Nepean, was ordered to take home a cargo of timber fit for naval purposes. Before leaving the bay, Captain Woodruff shipped 150 pieces of what Lieutenant Tuckey, the historian of the expedition, calls timber compass, the which, he goes on to inform us, was chiefly honeysuckle. History is silent as to the use made of this early consignment of shipbuilding timber.

Recent explorations show that the great Australian trees exceed in height, though not in circumference, the giants of California; some of the Australian trees must be regarded as very respectable in girth

as well as in height, the hollow trunk of one of them being large enough to admit three horsemen to enter and turn without dismounting, while they led a fourth horse. A fallen tree, in the recesses of Dandenong, Victoria, was measured not long since, and found to be 420 feet long; another, on the Black Spur, ten miles from Healesville, measured 480 feet. The highest trees on the Sierra Nevada, California, yet discovered, reach only 450 feet, the average size being from 300 to 400 feet in height, and from 24 to 34 feet in diameter. The wood of these trees closely resembles red cedar, and the reddish-brown bark is sometimes 18 inches thick, and the age of some of the oldest has been computed at 2,000 years.

The Colony of NEW SOUTH WALES is rich in its resources of indigenous timber. Not only along the coast districts, but in the far interior there are extensive bush forests; and vast tracts of country yet remain to be explored by the botanist. The supply obtained from the coast districts has been so ample, that there has been no necessity yet to penetrate into the interior for timber of a serviceable character. Many of the woods now used possess a hardness and durability unsurpassed by any in the world. Whilst some are characterized by the extraordinary beauty of their colour and grain, others are remarkable for their fibre-producing qualities. The number of species, and the size to which many of the trees attain, are astonishing.

The flooded gum is a famous timber for shipbuilding and for house-carpentering; it is often 7 feet in diameter, with a stem, without knot or flaw, of from 70 to 80 feet in length. It is procurable from many parts of the Colony. The blue gum, of the coast districts, is another magnificent timber, adapted to the same purposes, but it is not so hard or heavy, and scarcely so durable, as the iron barks. It grows from 3 to 6 feet in diameter, 100 to 160 feet high. There are many other of these gum trees that might be named. The black butt, one of the largest of the eucalypti, furnishes timber of excellent quality for house carpentry or other purposes where strength and durability are objects.

The differences of climate to be met with in the Colony, are, of course, conducive to the growth of a large variety of species. Whether required for shipbuilding, house-carpentering, or cabinet work, timber of all kinds is to be had in great profusion. Upwards of 420 specimens of New South Wales and Queensland woods were shown at the London Exhibition of 1862, and at the Paris Exhibition of 1867, the number from all the Australian Colonies had increased to 726, thus divided (Tasmania and New Zealand being unrepresented): New South Wales, 360; Queensland, 251; Victoria, 115.

As regards the lightness and strength of these woods, experiments made a few years ago, showed that whilst some of the strongest

timbers averaged but the weight of water, they required a weight of from one to two tons to break a stick only 4 feet long, and 2 inches square; and from four to six tons to crush 1 cubic inch against its fibre.

The extensive shipbuilding establishment of Mr. Cuthbert, at Miller's Point, Sydney, is capable of building vessels up to 500 tons. It has turned out, besides a large number of sailing vessels, many screw and paddle steamers, gunboats, and dredges. The native timber chiefly used is, for beams, the iron bark, black butt, and the flooded, blue, red, and spotted gums; and for fittings, the tea-tree, iron bark, black butt, and bangally. Mr. Booth's establishment, at Johnstone's Bay, is also large, occupying an area of $2\frac{1}{2}$ acres, with a water frontage; it embraces the largest saw-mills in the Colony, and has capabilities for shipbuilding up to 200 or 300 tons.

America has the advantage of Australia in timbers of the ash, beech, and hickory descriptions, but cannot compete with it in the production of kinds equivalent to the red gum and iron bark. Of blackwood, there are several kinds, one of which is so different from the wood usually meant by that term, that it is called "lightwood." This is one of the most useful products of the Australian forest, being the least liable to shrink, and it is put to many uses for which, in Europe and America, ash is employed. The native wood most resembling hickory is the white honeysuckle, which is extensively used for the manufacture of adze and fine hammer-handles. The best wooden treenails and keys for railway purposes here are made of oak, but Australian ironbark far surpasses that timber in all the requisite qualities.

As a proof, it may be stated that ironbark treenails were used for over five years by the Melbourne and Hobson's Bay Railway Company, and found to be far superior to oak; one taken up, after it had been in use three or four years, was perfectly sound. There is a considerable trade in Colonial timber already between Victoria, New South Wales, Adelaide, and Queensland.

In 1873, the value of the shipments of wood from each of the Australian Colonies was—

New Zealand	...	...	...	...	£27,878
Tasmania	...	...	...	...	46,614
Queensland	...	...	...	...	20,079
New South Wales	...	...	...	...	28,455

In some years the exports are much larger; for instance, New South Wales has, occasionally, shipped timber valued at £82,000, and New Zealand to £30,000 or £40,000.

The jarrah wood, of Western Australia, a species of eucalyptus, has always been esteemed, but is growing more and more into favour as

it becomes generally known. The special advantages of this timber are its great strength, hardness, and closeness of grain, combined with durability under exposure to either salt or fresh water. The tree grows to an immense size, attains a great height, and is very plentiful. Indeed, it was stated in evidence, some years ago, before a Committee of the House of Commons, by Admiral Sir James Stirling, that there was sufficient in the Colony to build twenty British navies. The forests have been much drawn upon since then, but the tree is of rapid growth.

The Western Australian Timber Company has had ceded to it by the Colonial Government 820 square miles of forest rich in this timber, near Geographie Bay, and have constructed a railway of 12 miles to the timber district, where they have extensive saw-mills. In the Colony, vessels of considerable burthen are built entirely of jarrah wood, the peculiar properties of which render copper sheathing unnecessary, although the teredo, or sea-worm, is most abundant in those waters. The wood is much sought after for railway sleepers and telegraph posts. It is admirably adapted for dock-gates, piles, keel pieces, kelsons, and for other heavy timber in shipbuilding. There are two other useful timbers of Western Australia—the tooart and the red gum, both eucalypts. The tooart has a very close grain, is extremely hard, cannot be split, and is capable of enduring great heat without rending. It has been suggested for gun-carriages on account of its non-liability to split; it is absolutely impervious to the inroads of those minute creatures so destructive to wharves, jetties, and any sort of naval architecture exposed to the sea, and it equally resists the attacks of termites. In these properties the red gum largely shares. This is a very valuable species of timber, for the extraordinary endurance of the wood under ground, and for this reason it is highly valued for piles and railway sleepers; for the latter it will last a dozen years, and, if well selected, much longer.

In TASMANIA it is estimated that there are about 4,000,000 acres of heavily-wooded land. Of the timber trees there are at least thirty varieties, some of which grow to a size almost incredible to those who have not seen them. The species of eucalypti grow to large proportions, in some instances to 300 feet high, with a girth of 102 feet. Of these timbers very-large planks can be obtained, sometimes 8 and 4 feet wide, to 140 feet length, without a flaw. The specific gravity of the gumwood, as it is called, is greater than that of the oak or the teak of India, and its weight per cubic foot much greater. Its strength is so great that a lath, 7 feet long and 2 inches square, will maintain a weight of 1,800 lbs. Of the blue gum tree there is one growing in a valley about five miles from Hobart Town, on Mr. Hull's estate of Tolosa, estimated to be 330 feet high,

which was measured by Sir W. Denison, K.C.B., and found to be 76 feet in circumference. At the Cam river, on the north, is a stringy bark tree, 200 feet to the first branch, and estimated to contain 225 tons of timber. In D'Entrecasteaux's Channel a swamp gum was cut down and split into palings, laths, and shingles for house purposes, and its produce was sold for £245. For many years there was a very large export from the island of sawn timber and split timber of all sorts, reaching, in some years, to the value of nearly £400,000. These are the larger and coarser timbers.

The ship-timbers produced by the gum trees, such as knees and other tough parts required in shipbuilding, have been found to be durable and not susceptible to dry rot. Well-authenticated instances of great durability in old piles and posts are of everyday occurrence; and scaffolding-poles of great length have been in use for twenty years and more by builders in the city of Hobarton, and they are as firm and tough as when first used.

Besides these, there are the myrtle, blackwood, musk, dogwood, honeysuckle, pine, and sassafras, cabinet woods of various colours and textures, and all producing the most beautifully-marked veneers for cabinetmaker's work. Of blackwood large quantities are exported for furniture purposes to Victoria, where it is extensively used for billiard tables and large furniture.

The myrtle slabs of 30 or 40 feet in length and 3 or 4 feet wide of a rich salmon or pink colour, make very beautiful cabinet work. The roots of this tree are veined in a variety of figures. The musk, huon pine, and honeysuckle make handsome picture frames, and take an excellent polish. These ornamental woods excited great notice at the various International Exhibitions in Europe.

In general character the New Zealand woods to a great extent resemble the growths of Tasmania and the Continent of Australia, most of the known varieties being harder, heavier, and more difficult to work than the majority of European and North American timbers. They vary, however, very much among themselves; for instance, kauri pine is a light, free-working wood, very suitable for house carpentry, ships' decks, and similar works, and about the same transverse strength as Memel deal. White manuka (and perhaps a few others) when sound and well grown, appear at least to rival the best specimens of Tasmanian blue gum, both in density and in transverse strength. Many of the less known woods also possess admirable qualities, and bid fair to be more used in future when the districts, in which they are plentiful, shall have become more thickly peopled.

As a rule, the New Zealand woods appear to be not so durable as the Tasmanian, at least stumps of felled trees seldom remain sound for any

length of time. There are, however, varieties which are considered very lasting, and manuka, totara, black birch, kowhai, and matai, or black pine, appear to be the most highly esteemed.

The most common timber trees are the kauri and the red and white pine, frequently displaying clean, branchless stems 80 feet long by 5 feet in diameter, and without a knot, adapted for every purpose of house and shipbuilding. The puriri, or iron wood, equal in durability to teak or oak, the rata and the pohutukawa used for ship timbers and wheelwrights' purposes, the kohe kohe and others used for shingles, split stuff and fencing, and the totara and a variety of fancy woods adapted for general purposes.

The extensive forests of the Auckland district provide constant occupation in the hewing and sawing of wood, and this labour is exceedingly profitable. The timber exported from New Zealand annually is usually a very large amount, in addition to the immense quantity consumed in the Colony for house and shipbuilding purposes and firing. The kauri and totara pines, in size, extent, and durability, equal Baltic pine, for houses and shipbuilding. One totara tree near Akaroa measured 37 feet in circumference. Kauri trees are used for ships' masts, being often 90 feet long without a branch, and the largest kauri trees have often a girth of 40 feet. Shipbuilding and the trade in timber are next to wool growing, among the most substantial elements of the prosperity of New Zealand. Valuable and beautiful furniture planks are sawn from the rimu, kaki-katea, or white pine, matai, mairi, and manuka.

The value of New Zealand spars obtained from Hokianga, on the west coast of the province of Auckland, has long been known in England; but the report of the French Commission on the comparative strength of timbers of various kinds, served to direct the attention abroad to the superior quality for ships' masts of the kauri pine, and cargoes of valuable spars are from time to time shipped from the northern ports of New Zealand.

Certainly, the most serviceable and noble tree of the many that adorn the New Zealand forest is the kauri pine, which attains to very large dimensions, the trunk being commonly from 25 to 35 feet in circumference, at a height of 5 feet from the ground, and tapering slowly throughout a height of 120 to 160 feet. There are some in the valleys of the Wairau whose trunks are upwards of 45 feet in circumference, and attaining a height of 150 feet without a branch.

The wood is light, free from knots, and durable. It is in great demand in every port of the Pacific for spars for shipping, and, indeed, with the exception of New Caledonia and the Isle of Pines, New Zealand is the only country in the Pacific from which these supplies can be drawn, the pine of the south of Chile being comparatively of little value.

There is one curious light wood of the Colony which is worth mentioning; it bears the native name of whau, and is of cellular tissue, and little more than half the weight of cork. When cut plank wise and carefully smoothed with glass paper, it presents all the appearance of a solid wood. It is used in the north island for fishing floats and similar purposes, and is said to answer very well, though when constantly immersed, it has a tendency to become partially water-logged. This material would make admirable life-belts, fenders, and linings for lifeboats, and similar articles only liable to be occasionally wet. It would answer for many purposes where little strength and great lightness are required, as, for instance, for rollers for the protection of plans and photographs, &c., when transmitted by post.

Having now gone as fully as space would permit over this branch of our subject, showing the value of our Colonies in a timber yielding point of view, we propose to turn, in the next article, to another natural product of importance to their own progress and that of the mother country—viz., coal, and describe the coal-fields of the Indian Empire and our Colonies.

WRECK REPORT FOR 1878.

JANUARY TO JUNE.

We have to inform our readers that this is a reprint of the veritable official report, with the omission of the tables; and is not, like that which usually appears in the daily press, a copy prepared from this for publication, by the Royal National Life Boat Institution. These preliminary observations are necessary, as we have noticed that one of the London daily papers, referred in a leader, and in plain words, to the report, as the report of that Institution.

General Remarks.

It has been found advisable to make up the tables of the wreck Statistics from the 1st July to the 30th June, instead of as formerly from the 1st January, to the 31st December. This change will enable the Abstracts of Wrecks, Casualties, and Collisions, to be presented to the Houses of Parliament earlier in the session, and will bring together in one publication all wrecks, collisions, and casualties that happen during one winter. In order to make this change, it is at first necessary to publish a return for six months only, and the following pages will, therefore, be found to relate to the first six months of the year 1878; the remainder of the

year 1873 with the first half of 1874 will form the subject of the next publication. In consequence also of this change, most of those tables, especially in Part I. of the tables, in which, for the sake of comparison, the figures for the last ten years are annually repeated, have been re-cast and re-modelled according to the new system; but, in a few instances, it has not been found practicable to do so, and they have been left in their old form, the figures for the half-year being merely added on. The returns which follow relate to both the Home and Foreign wreck registers. It should be distinctly understood that the wrecks and casualties treated of in the various tables do not mean total losses only, but include accidents and damage of all kinds to ships at sea, of which only a very small proportion are attended with loss of life. Thus, of the 967 wrecks, casualties, and collisions on the coasts of the United Kingdom, only 256 involved total loss, and only 97 were attended with loss of life. The number of vessels from which there was loss of life is 98, but two of these having been in collision with each other, make the the number of wrecks, &c., which involved loss of life, 97.

Wrecks at Home.—In making comparisons of the several tables, it must be borne in mind that, as stated in the Wreck Abstract for 1870, the wreck register of the United Kingdom for each year contains particulars of the whole of the casualties which have been reported to the Board of Trade as having occurred on, and near the coasts of the United Kingdom in the year to which it relates. "*At Home*" embraces the cases which happen in waters within 10 miles from the shores of the United Kingdom; in waters within any bays or estuaries; in waters around any outlying sandbanks which are dry at low water; in the seas between Great Britain and Ireland; and between the Orkney and Shetland and Western Islands and the mainland of Scotland. For the better understanding of the limits adopted in this classification, the officers round the coasts of the United Kingdom whose duty it is to report wrecks, &c., are furnished with copies of the wreck chart of the United Kingdom, upon which the limits are indicated by a black line drawn from headland to headland as shown in the chart of the United Kingdom appended hereto. These officers have, of course, been distinctly instructed that these limits are to be understood as relating solely to the arrangement of the wreck register for statistical purposes, and as in no way indicating or affecting the limits of British jurisdiction. In comparing the casualties recorded in the later years with those of earlier years, it should be borne in mind that, in consequence of the steps taken for the purpose, the casualties have constantly been more and more accurately and certainly reported to the Board of Trade; and in the returns of later years are included many casualties which would, under the arrangements of former years, no doubt, have been omitted.

Wrecks Abroad.—The Foreign wreck register, on the other hand, contains the wrecks reported in the year, some of which have, of course, occurred previously. As the reports of wrecks which happen at great distances from the United Kingdom, are not received in the Board of Trade until long after their occurrence, any attempt to include the whole of them in the register of the year in which they occur would have the effect of deferring the publication of the abstract to a late period of the following year. “*Abroad*” embraces the cases which happen anywhere beyond the limits of the Home Register.

Divisions of the Wreck Register.—It will be observed that the abstract is divided into seven parts, viz.:—(1.) Wrecks, casualties and collisions of British and Foreign vessels which occurred on and near the coasts of the United Kingdom. (2.) Particulars of lives lost on and near these coasts. (3.) Wrecks, &c., of British and Foreign vessels which occurred on and near the coasts of the Channel Islands and the British Possessions abroad. (4.) Wrecks, &c., of British vessels which occurred elsewhere than on or near the coasts of the United Kingdom and of British Possessions abroad. (5.) Particulars of lives lost abroad. (6.) Statement of official inquiries into the causes of wrecks, &c., held at home and abroad; and (7.) Particulars of lives saved and of means adopted for saving them.

Classification of Wrecks.—With a view to the careful and accurate recording of wreck statistics, the Board of Trade have adopted the following classification of wrecks and casualties for the purposes of the wreck register:—

(a.) *Collisions.*—(1) At home; (2) abroad; embracing collisions of all kinds between ships.

(b.) *Foundering.*—(3) After leaving a port in the United Kingdom; (4) after leaving a Colonial port; (5) after leaving a Foreign port; embracing founderings (other than those which result from collision, stranding, or striking on any sunken wreck or anchor), even though the vessel be subsequently raised again; vessels which sink after capsizing; vessels abandoned by their crews on the point of foundering, if not subsequently heard of.

(c.) *Strandings.*—(6) At home; (7) abroad; embracing strandings, whether through stress of weather, or accident, or to avoid collision or foundering; striking against piers, quays, cliffs, &c.; abandoned vessels driven on shore.

(d.) *Miscellaneous.*—(8) At home; (9) abroad; embracing fire, irrespective of result; scuttling and intentional damage to vessels; collisions with icebergs; striking on sunken wreck, anchors, or buoys; leakage (except when the vessel founders, or is run ashore for safety); loss of masts, sails, boats, bulwarks, &c.; loss of anchors and chains;

vessels which have capsized, but have not sunk ; damage to machinery ; fouling of anchors ; shifting of cargo ; derelict vessels brought into port.

(c.) *Vessels not heard of after sailing.*

Wrecks at Home. (Part I.)

Parts I. and II. of the return include both British and Foreign vessels ; they do not, however, include the numerous wrecks and casualties of British vessels which occur elsewhere than on the coasts of this country and in the seas adjoining (*i.e.*, outside the black line on the accompanying chart of the United Kingdom), but statistics of these are given in Parts III., IV., and V. The number of wrecks, casualties, and collisions from all causes on and near the coasts of the United Kingdom and in the surrounding seas, reported during the first six months of the year 1873, is 967, being 246 more than the number reported for the corresponding period in the year 1872. The following table shows the annual average number of wrecks and casualties on the coasts of the United Kingdom reported since 1858, divided into four periods of five years :—

Periods of 5 years ending	1857	Wrecks and Casualties	1,051
" "	1862	"	1,389
" "	1867	"	1,732
" "	1872	"	1,779

Of the total number of casualties included in Parts I. and II. (of the tables) a small proportion only are attended with loss of life. The following table shows the number of casualties on and near the coasts of the United Kingdom which were attended with loss of life, and the number of lives lost, in each year since 1861, distinguishing British from Foreign vessels :—

	1861	1862	1863	1864	1865	1866	1867	1868	1869	1870	1871	1872	1873 Jan. to June.
British vessels - -	170	130	139	96	147	172	245	177	183	101	116	100	90
Lives lost - -	705	617	533	475	597	792	1106	720	800	676	530	487	708
Foreign vessels - -	30	16	22	12	17	87	34	19	23	23	19	25	8
Lives lost - -	179	73	87	41	101	104	227	104	133	98	96	103	20
Total vessels -	200	146	161	108	164	199	279	196	211	124	135	125	98
Lives lost -	884	690	620	516	698	896	1333	824	933	774	626	590	728

Of these casualties, from January to June in 1878, about one out of ten results in loss of life. Amongst the returns is given an abstract showing for each year since 1861 the casualties attended with loss of life. (See end of Table 21.) The particular number of wrecks, casualties, and collisions reported for any one year is increased or diminished according to the prevalence or absence of gales of remarkable violence and duration.

1859 to 1866.—In October, 1859, there was the *Royal Charter* gale, and a loss of 843 ships. In January, February, and November, 1861, there were north-east and south-easterly gales, which added 460 to the number of wrecks, &c. In January, October, and December, 1862, there were westerly gales, with upwards of 540 wrecks, &c.; and in January, March, September, October, November, and December, 1863, there were westerly gales with 980 wrecks, &c. In November, 1864, there were 264 wrecks, &c., with the wind chiefly in the south-south-east and south-west, but owing to the absence of any special gales of remarkable duration and violence in 1864, the total number in that year was 274 below the number in 1863. In 1865 the gales of January, February, and March, October, November, and December, gave 766 wrecks, &c. In 1866 the gales of January, February, and March, October, November, and December, gave 798. Of this number, 279 occurred in January. The most serious disasters occurred on 11th of January. Of the shipping in Tor Bay on that day 61 vessels were either totally lost or seriously damaged, and 85 lives were lost from these 61 vessels. There were also numerous minor casualties.

1867.—In 1867 the heavy gales experienced in the months of January, March, April, October, November, and December added 980 wrecks and casualties to the list, and the whole of the wrecks, &c., reported in those months exceeded by about 400 the number reported during the same months of the previous year. Nine hundred and two, or about three-sevenths, of the wrecks, &c., of 1867, occurred in January and December, and 251 occurred in March. With the exception of the month of December, 1863, when 466 wrecks and casualties took place, the numbers for each of the three months stated above are higher than for the corresponding months of any previous year. The most serious gale of the year 1867 was that which commenced on the 1st December, and continued until the 8rd; during the continuance of this gale 319 lives were lost, 326 vessels lost or damaged. Of this number 146 vessels are reported to have been lost or damaged on the 2nd December. From the direction of the wind, which blew principally from the N. and N.N.E., this gale proved most disastrous to vessels on the east coast, and to fishing smacks on the Dogger Bank and other fishing grounds in the North Sea.

1868.—In the year 1868 one of the most serious gales occurred on the 22nd and 23rd of August, a month in which our coasts are seldom visited by heavy gales, and the number of wrecks and casualties reported during that month was more than double the number recorded during the same month in any previous year.

1869.—In the year 1869 a gale from N.N.E. and N.E., which caused great destruction to shipping, occurred on the 15th and 16th of June.

The most serious gale of the year 1869 occurred on the 19th of October, when the direction of the wind was from N. to N.E.

1870.—Few gales of remarkable force and duration occurred during the year 1870, and to this may perhaps be attributable the reduction in the number of wrecks and casualties. The most serious gale of the year commenced on the 12th of October, and during that and the following day 99 wrecks and casualties are reported to have occurred. The direction of the wind during the two days was from S.E. westerly to N.W. The principal gales which were felt in 1870, were as follows:—January 8th, from S.W. and W., on all the coasts of England. February 6th to 8th, from S.E. and S., in Scotland and the north and east of England. February 18th and 14th, from E. in the channel and on the east coast of England. March 4th, from N.E. in the east of England. During April no serious gale occurred. May 11th and 12th, a heavy S.W. gale was felt on all coasts except in the channel. During June and July no serious gale occurred. August 28th, a northerly gale was felt on the east coast. September 9th, a very heavy southerly gale was felt in the west of Scotland, the north of Ireland, and the Irish Sea. October 8th, there was a S.E. gale. October 12th-25th, a succession of very destructive gales was felt on almost all coasts, the directions drawing from S.E. through W. to N.W. No heavy gale occurred in November. December 25th, a S.E. gale was felt on the east coasts of Scotland and England. The two latter months are this year remarkable for the almost entire absence of serious gales. During these two months only sixteen wrecks and casualties are reported to have occurred on or near the coasts of the United Kingdom, with the wind at force 9 and upwards.

1871.—The gales which caused the greatest destruction to shipping on our coasts during the year 1871 were chiefly from the following directions:—January 18th-16th, from S.E. to S.W., most severe in the south of Ireland. February 10th-11th, from E. to S. in the north and from S. to N.N.W. on the south and west coasts. The most destructive gale of the year occurred on the 10th February. The gales in March were on the 7th, 9th, and 12th, their direction was generally between S. and W. During the months of April, May, June, and July, the wind is seldom reported as having reached the force of a gale. August 24th, from S.W. to W. on all but our S.E. coasts. September 27th-28th, from the S. in the channel, and S.E. to N.E. in the Irish Sea, and N.E. of England. September 30th, from N. on the E. coast of England. October 28th-29th, from S.E. to S. on our S.W. coasts. November 20th, from S. on our W. and N. coasts. November 30th-December 1st, from N.E. on the E. and S.E. coasts of England. December 18th, from

S. to S.W. on the W., N., and N.E. coasts. December 20th, S.W. to N.W. on our S.W. coasts and the English Channel.

1872.—The following are the gales which are reported to have caused the greatest destruction to shipping near the coasts of the United Kingdom during 1872 :—January 1st-4th, from S.E. to S.W. in the north, and S. to W.S.W. elsewhere. 17th and 18th, strong S. to W. gale, felt more or less on all coasts, but chiefly in the west. From 22nd to 24th, S.W. gale on the southern coast. In February there was no gale very destructive to shipping, nor in March until the 27th and 28th, when there were strong southerly gales on the south and south-west coasts. On April 21st, N.E. gale on both W. and E. coasts. During the summer months few casualties are reported as having been caused by stress of weather. On September 27th and 28th it blew a S.W. gale in the west and south. October 10th and 11th, gale from the S.W. to W. in the west and south, subsequently veering to N.W. in the W. and blowing heavily. November 6th and 7th, S.W. gales in the channel, and on the 10th heavy northerly gale, commencing in the west and extending to all but S. coast. 21st to 23rd very heavy gale from S.W., felt on all coasts. On the 8th and 9th of December there were unusually strong gales on all but the most northern coasts, E. to S.E., then N.W. in the north-west. S.W. to W. elsewhere,—this gale and the one on the 21st-23rd November were the two most destructive to shipping of the year.

1873.—The gales which did most damage to shipping on our coasts during the first six months of 1873 were as follows :—January 1st to 3rd, from S. to S.W., felt on all our coasts. January 18th, a sudden gale from S. in the N. and E., westerly in the W. January 25th, from S., felt on S. and W. coasts. February 1st to 3rd, from E. to S.E., felt principally on the W. and S.W. coasts of England. This was the most serious gale of the half-year, and 99 wrecks and casualties are reported to have occurred during its continuance. A gale from E., experienced on the S. and S.W. coasts, occurred on the 15th of March, but was attended with much less serious consequences to shipping. It has been found in numerous instances that the direction and force of the wind, as given by the masters in their reports and depositions, differ more or less from the particulars of weather reported to the Meteorological Office. Steps have, however, been taken for strict inquiry at the moment and whilst the facts are in mind, of all variations between the particulars of weather as given in the wreck reports made to the Meteorological Office. The number of ships lost or damaged in the 967 wrecks, casualties, and collisions reported as having occurred on and near the coasts of the United Kingdom during the first six months of 1873 was 1,206, representing a registered tonnage of upwards of 885,154

tons. The number of ships for that period is greater than the number for the corresponding period of 1872 by 811. The number of ships reported is, as has been formerly stated, in excess of the number of casualties reported, because in cases of collision two or more ships are involved in one casualty. Of the 1,206 ships, 936 are known to have been ships belonging to Great Britain and its dependencies, with British certificates of registry, and 225 are known to have been ships belonging to Foreign countries and States. Of the remaining 45 ships the country and employment are unknown. Of the British registered ships, 615 were employed in the British coasting trade, and 321 were employed in the (over sea) Foreign and Home trade. Of the ships belonging to Foreign countries and States, 21 employed in the British coasting trade met with casualties. Of the total number of Wrecks, &c. (967), reported as having occurred on and near the coasts of the United Kingdom during the first six months of 1873, 283 were collisions, and 784 were wrecks and casualties, other than collisions. Of these 784 wrecks, strandings, and casualties, other than collisions, 212 were wrecks, &c., resulting in total loss, and 522 were casualties resulting in partial damage more or less serious. The whole number of wrecks and casualties other than collisions, on and near our coasts, reported during the first six months of 1872 was 551, or 188 less than the number of wrecks, strandings, and casualties, other than collisions, reported during the corresponding period of 1873. The annual average in the United Kingdom for the 17 years ended December, 1872, is—for wrecks, other than collisions resulting in total losses, $472\frac{1}{3}$; and, for casualties resulting in partial damage, $748\frac{1}{3}$. As against this the numbers for the half-year, January to June, 1873, are for total losses, 212; and for partial damage, 522.

Of the 212 total losses from causes other than collisions, on and near the coasts of the United Kingdom, during the first six months of 1873, 59 happened when the wind was, as appeared from the wreck reports, at force 9 or upwards (a strong gale), and are classed in the following returns as having been caused by stress of weather; 89 appear, from the reports made by the officers on the coasts, to have been caused by inattention, carelessness, or neglect; 18 arose from defects in the ship or in her equipments (and of these 18, 7 appear to have foundered from unseaworthiness); and the remainder appear to have arisen from various other causes. Of the 522 casualties—i.e., cases of partial damage, from causes other than collisions, on and near the coasts of the United Kingdom, 241 happened when the wind was, as reported, at force 9 or upwards (a strong gale), and are included as having been caused by stress of weather; 100 arose from carelessness; 48 from defects in the ship or her equipments; and the remainder appear to have arisen from other causes. This is shown in the following table:—

Wrecks resulting in total loss arising from—

Stress of Weather	...	...	...	2,898
Inattention, carelessness, and neglect	}	...	1,495	
Defect in ships and equipments				
Various causes and causes unknown		...	1,082	
				4,975

Casualties resulting in partial damage arising from—

Stress of weather	...	...	...	5,001
Inattention, carelessness, and neglect	}	...	2,928	
Defects in ship and equipments				
Various causes and causes unknown		...	1,689	
				9,018

Total	13,998
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The total number of ships which, according to the facts reported, appear to have foundered or to have been otherwise totally lost on and near the coasts of the United Kingdom, from defects in the ships or their equipments (Class 8 of preceding table) during the year 1872-3 is 52; and the number of casualties arising from the same causes, during the same year, and resulting in partial damage, is 138. In 1872-3 there were, on and near the coasts of the United Kingdom, 100 wrecks and casualties to smacks and other fishing vessels. Excluding these 100 fishing vessels, it will be seen that the number of vessels employed in the regular carrying trade that have suffered from wreck or casualty here during the year is 2,592. This will be more readily seen from the following table. The life lost during the first six months of 1878 in the various classes is as follows:—In fishing smacks, 17; in vessels of the collier class, 283; and in other ships, 478:—

	1866-7	1867-8	1868-9	1869-70	1870-1	1871-2	1872-3
Fishing smacks	117	178	140	124	91	126	100
Coallers laden	713	617	698	559	541	594	788
Coallers in ballast	179	165	130	160	96	104	100
Metallic ores	131	105	131	131	149	147	181
Stone ores	163	137	161	164	135	101	166
	1,176	1,024	1,115	1,014	911	876	1,235
Ships with other cargoes, and other ships in ballast	1,077	973	1,051	1,088	1,002	888	1,357
Total Ships	2,370	2,170	2,306	2,226	2,004	1,890	2,692

It must be remembered that the great majority of these wrecks and casualties were partial losses, and only a very small proportion of them involved loss of life.

From Table 4 in the Abstract it will be seen that in the nine and a half years ended June, 1878, disasters on and near the coasts of the United Kingdom to comparatively new ships bear a very high proportion to the

whole number ; and that during the first six months of the year 1873, 94 wrecks and casualties happened to nearly new ships, and 209 to ships from 3 to 7 years of age. Then there are wrecks and casualties to 263 ships from 7 to 14 years old, and to 838 from 15 to 30 years old. Then follow 179 old ships from 30 to 50 years old. Having passed the service of half a century, we come to the very old ships—viz., 19, between 50 and 60 years old ; 18, from 60 to 70 ; 8, from 70 to 80 ; 2, from 80 to 90 ; and 2, upwards of 100. The ages of 84 are unknown. Of the 1,206 vessels lost or damaged on and near the coasts of the United Kingdom during the first six months of 1873, 60 were rigged as ships, 169 were steamships, 310 schooners, 146 brigs, 185 barques, 128 brigantines, and 62 smacks ; the remainder were small vessels rigged in various ways. Of the 1,206 vessels referred to, 478 did not exceed 100 tons burden ; 888 were from 100 to 300 tons, 211 were from 300 to 600 tons, and 189 only were above 600 tons burden. Of the 169 steamships, 142 were built of iron ; and of the 1,087 sailing vessels, 25 were built of iron. From Table 8, showing the parts of the coasts on which the wrecks and casualties on and near the coasts of the United Kingdom happened during the year 1872-3, it will be seen that, as usual, the greatest number occurred on the East Coast. The numbers are as follow :—East Coast, 988 ; South Coast, 825 ; West Coast, 616 ; N. and W. Coast of Scotland, 41 ; Irish Coast, 184 ; Isle of Man, 25 ; Lundy Island, 10 ; Scilly Isles, 15. The winds appear from the wreck reports to have been destructive to shipping on and near the coasts of the United Kingdom during the ten years ended 1872-3, in the proportions following :—N., 635 ; N.N.E., 617 ; N.E., 944 ; E.N.E., 615 ; E., 686 ; E.S.E., 590 ; S.E., 971 ; S.S.E., 700 ; S., 918 ; S.S.W., 1,809 ; S.W., 1,985 ; W.S.W., 1,238 ; W., 1,051 ; W.N.W., 1,009 ; N.W., 1,144 ; N.N.W., 579—total, 14,286. The above table shows that westerly winds are far more destructive than easterly winds—the most destructive being from south-west. It should, however, be remembered that westerly winds are far more common than easterly winds. It will be seen from Table 10, distinguishing the wrecks, &c., on and near the coasts of the United Kingdom, according to the force of the wind at the time at which they happened, that in 1872-3, 1,019 happened when the wind was at force 6, or under—that is to say, when the force of the wind did not exceed a strong breeze, in which the ship could carry single reefs and topgallant sails ; that 437 happened with the wind at forces 7 and 8, or a moderate to fresh gale, when a ship, if properly found, manned, and navigated, can keep the sea with safety ; and that 688 happened with the wind at force 9 and upwards—that is to say, from a strong gale to a hurricane. In other words, 1,019 happened when the wind was such that a ship could carry her

topgallant sails; 437 when a ship ought to be well able to hold her course; and 688 with the wind at and above a strong gale. The numbers for the last ten years are shown in the following table:—219, calm; 337, light air—just sufficient to give steerage way; 948, light breeze; 867, gentle breeze; 1,603, moderate breeze; 2,087, fresh breeze; 2,281, strong breeze; 795, moderate gale; 1,004 fresh gale; 4,388, strong gale; 1963, whole gale; 416, storm—under storm stay-sail; 842, hurricane—bare poles; 86, variable; 691, unknown—total, 17,922. As regards casualties in rivers—in the present abstract will be found a table of the casualties reported as having occurred to sea-going vessels in the rivers and harbours of the United Kingdom during the first six months of the year 1873. (See Appendix to Part 1.) As receivers of wreck and other officers on the coast are not empowered by the Merchant Shipping Act to report such casualties, the number must, necessarily, be incomplete. The total number of such casualties reported was 152, of which 16 were total losses. Of these casualties, collisions numbered 79, foundering 6, strandings 52, and miscellaneous 15. In the 152 casualties, 121 were to British sailing vessels, 96 to British steam vessels, 20 to foreign sailing vessels, and 4 to foreign steam vessels. The number of lives reported to have been lost is 3. As regards collisions off the coasts, during the first six months of 1873, 8 of the 233 collisions off the coasts of the United were between 2 steamships, both under weigh, and 10 of the 79 in harbours and rivers were also between 2 steamships, both under weigh; as shown in the following table.* There were also reported to the Board of Trade, during the first six months of the year 1873, the following accidents to the machinery of British steamships:—Accidents to machinery which caused damage to the vessel, 7; lives lost, 8. Accidents to machinery which caused no damage to the vessel, 127; lives lost, 2.

Loss of Life. (Part II.)

As regards the loss of life, the returns show that the number of lives lost from wrecks, casualties, and collisions, on or near the coasts of the United Kingdom, during the first six months of 1873, is 728. This is 138 more than the number lost in the whole year 1872. The lives lost during the first six months of 1873 were lost in 98 ships; 78 of them were laden vessels, 11 were vessels in ballast, and in 9 cases it is not known whether the vessels were laden or light. Eighty-two of these ships were entirely lost, and 16 sustained partial damage. Of the 728 lives lost,

[* As no lives were lost in these 18 collisions, we have not inserted the table. We may state that two only of the collisions between 2 steamers happened at sea, 6 in the narrow channels at the entrance of rivers, and 6 in rivers or harbours. This conclusively shows that a "narrow channel" or "river rule" is wanted.—Ed.]

81 were lost in vessels that foundered, 346 through vessels in collision, and 122 in vessels stranded or cast ashore. The remaining number of lives lost (179) were lost from various causes, such as through being washed overboard in heavy seas, explosions, and in missing vessels. One hundred and nineteen of these lives were lost in wrecks or casualties which, although they happened before 1878, are included in these returns, the reports having been received too late for them to form part of the statistics of their respective years; these 119 lives lost, and the 293 lost through the sinking of the ship *Northfleet*,* will account for the enormous increase in the loss of life in so short a period. From Table 23, showing the parts of the coast of the United Kingdom on which loss of life happened, it will be seen that, whilst the greatest number of wrecks, &c., happened on the East coast, the greatest loss of life during the nine and a half years ended June, 1878, occurred in the Irish Sea. Table 24 shows the number of lives lost on and near the coasts of the United Kingdom in fishing vessels and boats, sailing vessels, and steam vessels, during the last nine and a half years, distinguishing those lost through foundering, strandings, collisions, and casualties from other causes.

Wrecks Abroad. (Parts III. and IV.)

The statistics of wrecks abroad are comprised in three divisions, viz.:—Part III., relating to those which occurred on and near the coasts of the Channel Islands and the British Possessions abroad to British and Foreign vessels. Part IV., relating to those which occurred to British vessels elsewhere than on and near the coasts of the United Kingdom, and of British Possessions abroad. Part V., relating to the lives so lost. It is perhaps scarcely necessary to observe that wrecks, &c., of Foreign ships happening elsewhere than on the coasts of Her Majesty's dominions are not dealt with in the tables of these returns. It is, however, satisfactory to be able to state that many countries now publish wreck returns of their own. Part IV. (with the exception of Tables 36, 37, 88, and 89) excludes the wrecks of British vessels on the coasts of British Possessions abroad, which have already been enumerated in Part III. At the beginning of these returns, will be found two charts of the world in hemispheres, and a chart of Europe; these charts show all the wrecks, &c., included in Parts III. and IV., each wreck being marked, as far as practicable, on the exact spot where it happened. With regard to the tables of statistics, it may be remarked that the total number of wrecks, &c., included in Parts III. and IV. for the first six months of the year 1878 is 1,198. The following table shows the number of wrecks, &c., abroad, reported since 1867:—

[* The *Northfleet* was at anchor in Dungeness Roads, and was run into, sunk, and immediately abandoned, by the Spanish steamer, *Murillo*.—Ed.]

WRECK REPORT FOR 1878.

	1867	1868	1869	1870	1871	1872	1873 Jan. to June.
British vessels ...	935	935	961	1,208	1,754	2,415	1,156
Foreign vessels...	28	29	22	64	66	65	37
Total ...	963	964	983	1,272	1,820	2,480	1,193

(Part V.)

The number of these wrecks, &c., abroad, involving loss of life reported during the first six months of 1878, was 164, and the number of lives so lost was 1,850.

	1867	1868	1869	1870	1871	1872	1873 Jan. to June.
British vessels ...	195	158	185	174	212	248	161
Lives lost ...	1,671	1,426	1,682	2,255	1,659	1,892	1,818
Foreign vessels...	8	4	1	4	4	6	3
Lives lost ...	6	78	3	16	11	88	37
Total vessels ...	198	162	186	178	216	254	164
Lives lost ...	1,677	1,504	1,685	2,271	1,670	1,980	1,850

The large total for the half year January to June, 1878, is to be accounted for by the great number of lives (545) lost in the steamship *Atlantic*; in 1870, the total was swelled by the lives lost in H.M.S. *Captain* and the steamship *City of Boston*.

British Ships not heard of after Sailing.

It will be seen from Tables 21 and 41 that 83 vessels were not heard of after sailing or being spoken at sea, in which 1,025 lives are supposed to have been lost. Of these missing vessels, 78 belonged to the United Kingdom, involving the loss of 944 lives, and 5 belonged to British Possessions Abroad, involving the loss of 81 lives; 14 were steamships, involving the loss of 841 lives. Fifty-two of these vessels sailed from ports in the United Kingdom, 14 from ports in British Possessions Abroad, and 17 from Foreign ports. Seventy-one were laden vessels, four were vessels in ballast, one was a fishing vessel, and in 7 cases it is unknown whether the vessels were laden or in ballast. It may be observed that many of the missing vessels sailed previously to 1878, but were not reported until that year.

Salvage of Life. (Part VII.)

As regards saving life, the following table shows the expenses incurred since 1855, in providing apparatus for saving life on the coasts of the

United Kingdom. These sums have been paid by the Board of Trade out of the Mercantile Marine Fund—(abridged from table):—

	£	s.	d.
Amount paid by the Board of Trade to the funds of			
the Royal National Lifeboat Institution ...	43,305	17	7
Amount paid by the Board of Trade for Rewards, &c.	12,325	16	11
Expenses of rocket and mortar apparatus ...	86,704	14	10
Expenses of life-belts ...	* 1,325	6	5

Total expenditure paid out of the Mercantile Marine

Fund † 148,661 15 9

The following table shows the number of lives saved and the number of lives lost, on and near the coasts of the United Kingdom, during the same period—(abridged from table):—

Lives saved—

By ships' own boats ...	25,462
By ships and steamboats ...	15,522
By luggers, and coastguard and other boats ...	9,950
By lifeboats ...	7,521
By rocket, and mortar apparatus, lines, &c. ...	6,502
By other means ...	5,855
By individual exertion ...	209

Total lives saved ... 71,021

Lives lost ... ‡ 18,466

The Board of Trade from March 1868 till January 1870 paid an annual sum of £2,500 to the Royal National Lifeboat Institution towards the maintenance of their boats, in lieu of paying a subsidy in respect of certain boats. At a special meeting of the Committee of the Institution, held on the 2nd December, 1869, the following resolution was, however, passed:—"That the Royal National Lifeboat Institution, owing to the large and extended support of the British public, having attained a truly national position, it no longer requires the assistance it has, since the year 1854, received from the Board of Trade." The Board of Trade, therefore, no longer make any contributions to the funds of the Institu-

* A similar amount has been paid by the Admiralty.

† [As this goodly amount has come almost entirely out of the pockets of ship-owners, it is not true that they are careless as to the life of the sailor, as has often been said by agitators.—ED.]

‡ The number of lives lost during the first six months of 1873 is 728.

tion. Six of the boats belonging to harbour authorities in the United Kingdom are subsidized or paid for, to some extent, by the Board of Trade out of the Mercantile Marine Fund. For the purpose of saving life from shipwreck, there were, at the end of June, 1878, on the coasts of the United Kingdom, 286 sets of rocket and mortar apparatus, wholly provided and paid for by the Board of Trade out of the Mercantile Marine Fund; and there were, at the same time, 263 lifeboats. Of these lifeboats, 232 belonged to the Royal National Lifeboat Institution, and 31 to harbour authorities, beachmen, &c.* There were, also, 537 stations supplied with Captain Ward's cork life-jackets. These life-jackets are for the coastguard to wear, with the object of giving them more confidence when going off to a wreck in the coastguard boats. There are now 7 volunteer life brigades and 150 volunteer life companies, which have been formed for the purpose of enabling persons residing on the coasts of the United Kingdom to acquire a knowledge of the rocket apparatus, and of the method of using it in case of shipwreck, independently of, or in co-operation with, the coastguard and receivers of wreck. A list of the brigades and companies in the United Kingdom, showing the strength of each on the 30th June, 1878, will be found in Table 50 of the return. Table 53 gives a list of places in the United Kingdom where the storm-signals are hoisted on receipt of a telegram from the Meteorological Office; also a list of places supplied with fishery barometers. In April, 1867, Her Majesty, by warrant under the Royal Sign Manual, was pleased to institute two new decorations, to be styled respectively, "*The Albert Medal of the First Class*," and "*The Albert Medal of the Second Class*," in lieu of the decoration instituted in March, 1866. A copy of the warrant instituting these decorations is appended to this Report. Since the date of this warrant, 7 medals of the first class, and 12 medals of the second class, have been awarded. In addition to pecuniary rewards, the following presentations have been made by the British Government during the first six months of the year 1878, for saving life, viz. :—4 barometers, 13 gold watches, 7 telescopes, 17 binocular glasses, 7 gold medals, 16 silver medals, 2 silver wine jugs, a silver tankard, and a double-barrelled rifle. In the same period, the under-mentioned Governments have presented the following rewards to masters of British vessels and others, for saving the lives of foreigners :—

[* We ought specially to mention that the lifeboat at Ramsgate was generously presented to the Board of Trade by the Royal National Life Boat Institution; and that the Board of Trade, and not the Institution therefore, pay for its exercises and services out of the Mercantile Marine Fund. It would be absolutely useless were it not that one of the steam tugs always takes it out. The Mercantile Marine Fund (i.e., the shipowners) pay expenses of both tug and lifeboat and their crews.—ED.]

Dutch, 1; German, 2; Italian, 7; Spanish, 6; United States, 8—Total, 19. In addition to the above rewards, the French and the United States Governments presented their thanks to British subjects for services rendered to seamen belonging to their respective countries.—*Marine Department, Board of Trade, July, 1874.*

THE TRADE IN FLIMSY STEAMERS.

BY "flimsy steamers," we do not now mean steamers that are badly built, or made of bad materials; but that class of vessel intended for the smoothest water and the lightest possible draft, appropriate constructions when on their own waters, but meriting all of execration or sneer there is in the word "flimsy," when they appear on ocean waves amongst seagoing vessels. This country has sometimes done a roaring trade in such light steamers. When the voyage to their destination is a long one, and exposes them to all the violence of ocean storms, the risk is very great, unless by temporarily strengthening the hull for the voyage out, a degree of solidity of structure in keeping with that voyage, and unsuitable for the intended station be imparted to the vessel.

Upon whom shall the responsibility of this risky, but profitable, trade be placed? Shall the Legislature, at a nominal charge, but enormous cost, provide a staff of officers to settle for those engaged in such ventures exactly how near to the wind they may sail in lightness of scantling? Yes! say the school, whose password is interference; Yes! they say, survey every vessel! On the Government be the onus of every unseaworthiness; and on the Government rest the odium of every interference there would be, necessarily or unnecessarily, with this hitherto legitimate trade. We have all along advocated a free-trade policy, without grandmotherly supervision. If a manufacturer uses a two-ton crane to lift a ten-ton weight, and, in the operation, by the failure of the machine, the workmen are killed, the manufacturer knowing that he had used a two-ton machine to do a ten-ton machine's work, would be judged by a jury of his countrymen to be guilty of the death of these men, and the dread of the verdict of manslaughter is found to be so all-powerful, that it is rarely such a misdemeanour is committed.

We will not yield to anyone in our feeling of sympathy for sailors who, at all seasons, but especially during the gales which have for some weeks been committing such havoc on our coasts, are exposed to "the peril of waters, winds, and rocks." It is because we wish them to be effectually protected that we have always said, and still mean to say,

leave the shipowners to do their own work themselves, and hold them responsible, just as is done on shore, when life or limb is lost, by failure of the appliances specially provided for the workman's use. The propriety of the policy we have advocated is likely to be soon decisively proved by the issues of a series of important Board of Trade inquiries that are this winter, without any interval, occupying the assessors.

The *Chusan*, the first of the light-built craft we have to notice is presented to us by a shipbuilding firm of the highest eminence, as a vessel they considered fit to be sent to sea. Suppose the law of universal inspection to be enforced; to be workable, the officers must not be vexatiously interfering with respectable builders. The builders of the *Chusan* are of high standing, the vessel was of peculiar construction, of great beam and great length with what was represented as special compensation for longitudinal strength in the shape of longitudinal bulkheads, and fore and aft a lattice girder at each side, the full depth of the vessel. At the inquiry, it was shown by the Board's surveyors that that strength was inadequate, and that by an error in detail the value of this compensating construction was rendered almost nil. The Board of Trade might, with some satisfaction, point to the report of their officers as evidence of the ability of their staff, and the public might be led to believe that if such surveyors were employed to examine all the "flimsies," the risk of loss of life by such vessels would be greatly diminished. We dissent from this conclusion *in toto*. It is very easy to report on a vessel that is already wrecked, about which there exists no longer presumptive belief that she is really seaworthy; but we very much doubt whether these same gentlemen would have been so decisive in their statements of want of strength, if the vessel, broken in two, had not been before their eyes. Board of Trade officers might have been misled in the same way as the builders were, and if they *had* passed the vessel, their certificate would have gone a far way to shelter the owner. In what we are saying, we know we are in opposition to these surveyors, whose competency we do not mean to question, but we have yet to learn that Board of Trade surveyors at the small salaries they receive can really be, at all the ports, better men than the practical members of such firms as that of the builder of the *Chusan*, and we do not doubt that that firm had every confidence in the *Chusan* for her voyage. The flimsiness of this vessel was not, however, the direct cause of her loss. The unmanageableness of the vessel through stress of weather in narrow waters, the leeway made being unknown and of unprecedented amount through the omission of a specified false keel, was the proximate cause of the loss of the ship. The public are no doubt indebted to the Board of Trade officers who pointed out these defects, but the public must not be led away by

that feeling to suppose Board of Trade officers any more likely to have such a vessel made safe because they had inspected her, than a ship-owner and a shipbuilder who are bound by the courts of their country to establish, in the event of accident, that their responsibilities were fully and fairly discharged in the construction and equipment of the vessel. The omission of the false keel led to an error of judgment on the part of the pilot ; but, as the vessel was mechanically capable of keeping off the coast, and was only driven thereon by carrying a miscalculated amount of port helm, the loss of the vessel is, therefore, not traceable directly and necessarily to her construction, and no Board of Trade survey, in our opinion, would have secured a more seaworthy *Chusan*. Government surveys in a country with a popular Government must work to a minimum scantling—they must ask always something less than the utmost that could be demanded ; and if a Board of Trade scantling for “ flimsies ” were to be issued and certified, it would only be tolerated if about 20 per cent. flimsier than any respectable firm would at present dare risk to send to sea.

So much for the *Chusan* ; a previous survey would not necessarily have improved her. Vessels built under special survey of Lloyds and of the Liverpool Book have, after all, been unseaworthy when sent to sea, and through that unseaworthiness some have become total losses on the first voyage, while others have had to be nearly rebuilt before a second voyage could be undertaken. It is by our experience of these Registry Surveys that we condemn the policy of substituting a professional for a personal responsibility in the protection of life at sea. Unless some self-interest as powerful as that of ownership or of personal responsibility supervene, the routine inspections of the best surveyors inevitably gravitate towards perfunctoriness, and perfunctoriness at its best, which is all that can be required of the most conscientious surveyor, would be no protection whatever against the latent defects of exceptional construction. To the *Chusan* there is a sister vessel, and it may be urged that she will be made stronger. We do not doubt that. But she will be still stronger by there having been no preliminary Government survey on the first vessel. The Government surveyor would have been hampered by his first report, and, we care not who may be offended by our remarks, the opinions of all technical surveyors and witnesses are, in our minds, very much the creation of circumstances, and we never yet met one who would not try to justify a report to which he had previously committed himself. In declaring the *Chusan* to have been not seaworthy for the voyage on which she was despatched, these gentlemen were at liberty to state unbiassed opinion. If they had previously certified her as seaworthy, would there not have been a twist in their judgment ?

The passenger steamer *Mary*, a vessel 212 feet by 25 feet by 8 feet

6 inches, that broke in two in the Bay of Biscay on the same day that the *Chusan* broke on the rock at the entrance to Ardrossan Harbour, is the next vessel that presses before us for consideration. The reports obtained by the Board of Trade on the construction of the *Mary* unanimously assert that this steamer was unseaworthy, and apparently without one saving clause in her construction. A previous survey—say the universal survey school—would have prevented her being sent to sea; but that is just what a previous survey did not do, for she *was* surveyed by a most conscientious and highly-experienced professional man, and pronounced by him to be *seaworthy*, and of even more than ordinary strength for her class. This opinion was formed under circumstances much more likely to secure a staunch seaworthiness than would obtain in the merely official discharge of Government duties. On the correctness of that surveyor's certificate, those whose agent he was were ready to stake, and did actually stake, ten thousand pounds. Is it not highly absurd to suppose, as the inspectionists' school would have us believe, that if that surveyor had only been paid out of the consolidated fund, and only a small salary, instead of double the amount by business men, under whose eyes he worked, and who were either to gain a little or to lose a great deal by his action, *then* he would have seen quite differently, and his certificate would have been true as Holy Writ. We have a little confidence in the general efficiency of some Government departments; but we should be sorry to be carried away by such overweening partiality for Government work as these universal survey-panacea advocates are possessed by. The self-protection of the owner and of the underwriter are the legitimate protection of the sailor; but if the owner seeks his protection only in an unconditional policy, and if the underwriter seeks his protection only in higher premiums, what is there left for the sailor, whose family gets neither premiums nor policies? Let the Courts decide that a policy upon an unseaworthy vessel covered by extra premium, instead of by added strength, is forfeited by both the owner and the underwriter. This is *our* panacea for unseaworthiness. Where reasonable grounds exist for doubting the seaworthiness of a ship that has been lost, let the sum covered by insurance be paid into Court, and when the owner proves that his vessel was seaworthy when he despatched her, then pay him the money; but not till then. Insurance policies, as a protection against "the peril of waters, winds, and rocks," are necessary, but they ought not to be tolerated in a civilised country as protection against the perils of defective construction. We believe in undivided responsibility, and, therefore, we will not recommend that a large staff of surveyors should be appointed to furnish owners of flimsy steamers with official certificates "of more than ordinary strength," as they would certainly do. We have often said let these ship-

owners and underwriters have all the length of tether they desire, but if they cause loss of life or limb, then "let them have justice without mercy." We say so now with reference to this *Mary*. A father and son—first and second engineers—drifted about on the Bay of Biscay from 4 p.m. till 7 a.m. following, on a piece of wreck, the top of a water-closet. At 7 p.m. they took on, beside them, another victim who had been floating for three hours, and had lost a thumb by the mast falling on his hand when the steamer broke in two. Let us picture to ourselves these three men as they were that night—one with his thumb-stump wrapped in his cap; the father without his jacket. He said the boat broke under his feet, and he stooped to call his son to come up, as she was breaking-up, and when he rose up, his jacket had been caught in the break, and he ran and left it. If that picture does not suffice, try another: not far from these, but out of reach of sight or hearing, is the lifeboat, smashed by the mast, but floating by its cork buoyancy; the water inside on a level with the water outside, and with one oar raised with a jacket on it for a signal. There are five brave men in that thing, and they have no food and no drink. On the second day one of the number dies from exhaustion, then a second one becomes delirious and jumps overboard. On the next day a third one of the number becomes delirious and jumps overboard twice, and is twice pulled back by his two miserable fellow waifs; a third time he jumps, and this time he is beyond their reach; they have no oars, and he sinks, and they have another night by themselves, signalling and hailing every vessel that came in sight, for they still had their sight and their reason, although they had had neither food nor water for sixty hours. They were then rescued by a passing vessel, and the above is their story. They say the *Mary* was bending like a fishing-rod from the very first. She had to put into Belfast and then to Kingston for shelter; and then the *Mary*, a river-boat of the lightest construction, intended to draw only 27 inches of water when on her station, with decks only $\frac{1}{4}$ th inch thick of sheet iron, and no wood on it to stiffen it, this boat, with no additional strengthening for the voyage, only 200 tons of coal added to her normal load to keep her from being blown away, was actually steamed into the Bay of Biscay all a-crumpling as she went; and, after exciting the wonder of the engineers that "she must be of good iron, that boat, to bend so far without breaking," she then broke to show them she could break as well as bend; and in fine weather, on a long gentle swell, the steamer *Mary* broke in two, and went below. This is a statement of the account; it is an account that is now waiting for settlement.

If a jury of twelve honest men and true will decide that such things are all the legitimate risks of a fair trade, then seaworthy ships are

not wanted by the public mind, and a popular Government ought not to interfere with the unseaworthies. If, on the other hand, they bring home the responsibility to those who were *pecuniarily concerned* in the venture, the "flimsies" will have received their death-blow far more effectually than could have been accomplished by the appointment of all the self-styled experts, and all the half-pay captains in the country as surveyors of unseaworthy ships.

LIFE-SAVING ROCKET APPARATUS.

WE have a distinct suggestion to make to the Board of Trade concerning the present occasional unsatisfactory state of the mortar and rocket life-saving apparatus on the coasts of the United Kingdom. The Board of Trade are empowered to spend, and do spend, very wisely and liberally out of the Mercantile Marine Fund all expenses for providing and maintaining this apparatus in a state of efficiency, and for ensuring that it shall be used at wrecks with the utmost promptitude in emergencies. That the money is spent and that the apparatus is still, in many cases, useless is what we think demands attention. At North and South Shields, and at some other places, the coastguard and volunteers have their hearts in their work, but at very many stations this is not so. A lavish expenditure in providing the apparatus, and a niggardly expenditure for inspecting it and using it, are the present fashion. For our own part, we think it would be better, as it would be infinitely cheaper, for many stations to be broken up at once. At present the apparatus is, through parsimony and absence of co-operation, a rotten reed that will lead to great disaster.

In the first place, owing to Admiralty arrangements, the coastguard men are sometimes sent bodily away scores of miles to drill in a coastguard ship in harbour when their presence is most needed on the coast, and thus it came about at the wreck of the *Chusan*, at Ardrossan, from which every life might have been saved with the utmost certainty and the utmost ease had there been any sufficient number of coastguards on the spot to use the rockets, that they were lost because the coastguard were snugly stowed away in a drill-ship in an inland harbour. The one solitary coastguardsman left at Ardrossan could do nothing. He could not use the apparatus by himself and no one else could help him, and the result was as the Board of Trade might have expected, had they thought about the matter at all. Then the lifeboat, a beautiful, but heavy

self-righting contrivance, was only capable of being bumped about inside the harbour, while a little skiff went out to the wreck with great gallantry. That she saved no life was not the fault of those who manned her, as the Board of Trade payment of £8 to each of the crew testified. In the second place, the boats of the Royal National Lifeboat Institution monopolize the coastguard at many stations, so that the rocket apparatus is sometimes left useless. Where there is a lifeboat as well as a rocket apparatus at a station the coastguard naturally man the lifeboat and leave the rockets, and they do this for two reasons. The Board of Trade pay almost nothing for services of Coastguard with the apparatus, and make no reference to them by publishing the cases in newspapers, so that the men are neither well paid nor publicly recognized; whilst the Lifeboat Institution pay liberally, and advertise, and publish effectually. When a lifeboat does not go out or fails, no official notice is taken (the lifeboats at Ardrossan, Fraserburg and Shields, failed absolutely recently; but there is no public inquiry and no condemnation); but when the rocket apparatus fails, or is not used, public inquiry and public censure follow. When a gallant rocket rescue is effected no one hears of it; but whenever a lifeboat goes off, whether there is danger or not, it is like a fire to a fire insurance office, and means advertisements, more publicity, and more subscriptions. To such an extent is the lifeboat mania carried, that people seem to have come to look upon the presenting of a lifeboat, as an act as meritorious as, in the superstitious ages, was thought to be the endowing of a monastery, a nunnery, or a chapel, or eternal provision for candles and masses for a soul.

Everyone knows that for capturing slavers on the coast of Africa and freeing blacks the sum of £5 is paid for each man freed, while for saving the life of British seamen from shipwreck on our coasts by the rocket apparatus, 5s. is about the sum paid by the Board of Trade. The coxswain of every lifeboat has a salary paid by the Institution. The same man often, for taking charge of the rocket apparatus, gets nothing but a deal of official form filling. The payments is 10s. to £2 to each man who goes out in a lifeboat. The Board of Trade pay for using the rocket apparatus—to the officer, 2s. when life is not saved, and 4s. when it is; and to the men from 2s. to 5s. It does not require great acumen to see why the men go in the lifeboat and leave the rocket apparatus alone. We know of a case where a coastguard at great risk saved ten lives, even by going out in a boat, and was paid by the Board of Trade 15s.—that is to say, 1s. 6d. a life. The risk was infinitely greater than lifeboat service, because the boat was a common one, and neither buoyant nor self-righting.

Again, the coastguard officers, in many cases, take but little interest in the apparatus; they are not paid for inspecting it, and for seeing to

periodical drills. The lines are, in many cases, in a bad state, and the apparatus seems to be stowed away, and as far as possible forgotten. Some of the inspecting officers do not even know what the stores are, and they are wasted and neglected.

All this goes to show three things as regards the rocket apparatus—First, that better inspection is wanted.

Secondly, that better payment and due acknowledgment and publication of services are wanted.

Thirdly, that some rigid rule is wanted whereby the coastguard, as public servants, are to attend to the rocket apparatus, which is public property.

Fourthly, that the practise of sending the coastguard bodily away, when they must be wanted at wrecks, requires reconsideration.

We recollect how all things went well in the good old days, when the Commodore of the coastguard had a separate office, and was responsible; and we hear with delight, of the determination of the present Government to incur the wise expenditure of again establishing that separate command. It is the true economy of judicious expenditure. We have no doubt that as soon as Admiral Sir Walter Tarleton is installed in his new office, in Spring Gardens, he will co-operate in these matters as he did of old; and we hope that by a little more liberal expenditure on the part of the Board of Trade the present very unsatisfactory state of things will be remedied. The rocket apparatus is the best that human ingenuity and lavish expenditure can provide, and it is galling to think that it is so far rendered useless by parsimony and absence of command at the last moment. The good ship is spoiled for want of the proverbial halfpennyworth of tar.

DOCKS AT SHARPNESS.

THE rage for new dock-works seems to be extending, and has seized the rather somnolent populations on the banks of the Severn. In order to meet the want felt for accommodation for the larger class of vessels now frequenting our seas, the Gloucestershire people commenced, in 1871, to build larger works at the opening of the "Gloucester and Berkeley Canal," at Sharpness Point, situated on the southern bank of the Severn river. The works were completed about the beginning of November last, but, owing to an accumulation of silt at the mouth of the new basin, they were not formally opened until the 25th of that month

at 9 a.m., amid most unpropitious weather. The rain fell incessantly, and a cold, strong, southerly wind prevailed. Notwithstanding the cheerless prospect, a crowd of people assembled, amongst whom were the chairman and some of the directors of the company. The first vessel to be docked was the barque *Director* (600 tons), of St. John, N.B.; and the second the full-rigged ship *Protector* (854 tons), of Norway. Both were laden with timber. The former had some difficulty, owing to the set of the tide shearing her on to the curve of the north pier; but the latter entered with more ease. Guns were fired in honour of the event; and the chairman of the company (Mr. Lucy), together with Mr. Clegam, the engineer, were especially congratulated by those assembled on the success of the achievement so successfully carried out. A local paper observes:—"The ease with which the vessels entered placed the successful planning and construction of the entrance beyond a doubt. The slight hindrance caused by the *Director* getting over to the north pier was owing to a little miscalculation, which experience will easily prevent; while the quickness with which the second vessel followed shows that there will be ample time for a number of vessels to enter at each tide. The advantage thus gained is not likely to be over-estimated. One of the great drawbacks to the trade of the port has not only been the inability of the old entrance to admit large vessels, but the long and costly detentions at King Road, because of the small number of vessels which, owing to the difficulties of entrance, could get in at each tide. This is now obviated, and the splendid accommodation which is also provided in the discharging basin for vessels staying or proceeding to Gloucester, reducing loss of time, and, consequently, loss of trade, to a minimum, shows that all that was aimed at has been gained in the construction of Sharpness New Docks."

The dimensions of the new works are as follows:—Tidal basin, 700 feet long, by 800 feet wide; width of entrance, 60 feet; depth of entrance at high water, 26 feet; lock, 320 feet long and 60 feet wide; three gates in lock, 60 feet wide each; entrance to Canal from lock, 24 feet deep; discharging dock, 2,200 feet, by 350 feet, diminishing to 200 feet, or 18½ acres. The cost amounts to about the sum authorised to be raised by the Act under which the works are constructed—namely, £200,000.

As our readers are aware, the Canal mentioned connects the Bristol Channel and the city of Gloucester. It is a ship-canal, and is considered, in some respects, one of the best in the kingdom. Practically, it has formed the port of Gloucester since its opening on the 26th April, 1827. The company have now acquired the Worcester and Birmingham Canal (opened 1791), and others allied therewith; the title of the amalgamated schemes being now changed to the "Sharpness Docks

and Gloucester and Birmingham Navigation Company." The city is very ancient, and was famous for its struggles during the contests amongst the Britons, the Romans, and the Saxons. Its origin is attributed to the former. It was almost totally destroyed during the rupture between William Rufus and his brother Robert, although it had been "one of the noblest in the kingdom," according to Bede. Its imports consist mainly of timber and corn, and its exports of salt, iron, and bricks. Previous to the opening of the Canal, its goods were mostly brought to it in barges, which had transhipped them from vessels lying in the Severn. The labour and enterprise attending the formation of the Canal were accompanied by many vicissitudes and disappointments. No less than seven Acts of Parliament (including the one for the docks under notice) have been passed for it. The first was obtained in 1793. Then followed others in 1797, 1805, 1818, 1825, and 1825. The total capital authorised to be raised, under these various measures, amounted to £680,000, nearly all of which has been expended. The great drawbacks to its first success seems to have been the failure of the engineering department in getting a proper outlet. It was first designed to terminate at Berkeley Pill, but after five miles had been completed from the Gloucester end, and the capital expended, that scheme was thrown up. Ultimately, the one that succeeded had the foundation stone laid in July, 1818, by the Duke of Gloucester, who showed great interest in the work. The stone weighed four tons, and on it a brass plate was affixed, bearing the following inscription:—"To extend the advantages of commerce into the interior of the kingdom, and to facilitate the intercourse with foreign countries, the Gloucester and Berkeley Canal Company projected this work. The approbation of the most illustrious and dignified personages sanctioned the undertaking, and the countenance of his Royal Highness William Frederick, Duke of Gloucester, assisted by the noble House of Berkeley, was particularly evinced in graciously condescending to lay the first stone of this harbour, the fifteenth day of July, 1818. Long may it remain unmoved, a monument of national enterprise, a benefit to the proprietors, and a secure harbour for the commerce of the world!" In those infant days of engineering science, it seemed a wonderful feat to do such a deed, and hence the magniloquent strains in which the account of it is set forth. It is also stated in a local journal that, "immediately the ceremony was completed, the air was rent with acclamations, and old Sabrina's rocky shores re-echoed with the joyful shout of the surrounding multitude." There was no steam power in those days to facilitate the entrance of the vessels. The second vessel which entered was the *Annie* (800 tons), of Bristol. Some difficulty appears to have attended the approach of the ship, for it was a dead calm, and she had to be towed by boats. The ebb had set, and it

was only by getting a warp out to her, and hauling her along, that the vessel was safely passed into the canal. Another extract, from the newspapers of the period, is instructive, if not amusing, in showing the difference of opinion with regard to these things, which prevailed some fifty years ago. Now-a-days, we make docks having areas of even hundreds of acres, and see, unmoved, a leviathan like the *Great Eastern*, of 23,000 tons. It seems rather odd for us to read, regarding this small dock of eight acres, and still more diminutive ships, comparatively, that "The noble and imposing spectacle of a stately vessel of 300 tons burthen, in a style of complete equipment, as to rigging, &c., and decorated with a profuse display of colours and streamers, may naturally be supposed to have excited the admiration of the thousands who accompanied her throughout the whole line of the Canal; and the opportunity of viewing such a fine structure within the limits of the city, invites the attention of multitudes of spectators to an object which may very properly be classed as one of the most important achievements of human art." If Defoe had lived long enough to see it, he must have envied the writer of the last sentence. However, the Canal was a success, and, contemporary with the great increase of our national commerce, has served to swell the profits of the ancient city. The docks, warehouses, &c., for corn, and timber yards, have been increased from time to time. The population has steadily advanced, though it cannot be said to be at the same rate as some of our more modern ports. In 1841, it amounted to 14,497, and last census to 18,880, within the municipal limits. The Parliamentary boundary being larger, gives a gross number of 31,804 in 1871. The arrival return of vessels, which is a good test of the trading development, shows as follows:—

				Vessels.		Tons.
1852.	Foreign trade	...	...	125	...	22,998
	„ Colonial „	...	...	130	...	56,651
	„ Coasting „	...	...	961	...	43,034
1872.	Foreign trade	...	...	827	...	177,978
	„ Colonial „	...	...	71	...	27,889
	„ Coasting „	...	...	952	...	41,685

The clearances outwards were—

				Vessels.		Tons.
1852.	Foreign trade	...	...	222	...	42,804
	„ Colonial „	...	...	16	...	6,814
	„ Coasting „	...	...	2,584	...	102,045
1872.	Foreign „	...	...	143	...	33,450
	„ Colonial „	...	...	25	...	7,966
	„ Coasting „	...	...	3,818	...	143,150

The number of vessels belonging to the port have, however, decreased ; as see—

			Vessels.		Tons.
In 1852 they were	...	...	346	...	19,158
„ 1871 „	...	...	240	...	10,878

The business, upon the whole, has increased, and, no doubt, there existed a necessity for the new docks at Sharpness, especially when it is considered that the flourishing ports of South Wales offer such advantages to ships for outward freights, and have induced many of the ships intended for Gloucester to go there and discharge. It is now hoped that the new docks will be sufficient to accommodate all the vessels intended for Gloucester for some time to come ; and when the new bridge or tunnel (contemplated) is built across the Severn, it is anticipated that a large quantity of coal, from the Forest of Dean, will be there shipped. Moreover, the amalgamation with the Worcester and Birmingham Canal Company, will also give an opportunity of developing a carrying trade to the Midland Counties, and, to stimulate which, the directors are now considering an improved plan for expediting the traffic. At the half-yearly meeting of the shareholders, held at Gloucester on the 18th November last, the chairman said, amongst other explanations, and in moving the adoption of the report, “ Nothing could more strongly prove that the geographical position of Gloucester was good, than the fact that during the last three years they had been enabled to carry on so large a trade in spite of their disadvantages, and that, too, with a gradual increase of revenue. How long it would take to fully develop their trade resources it was not for him to say, but he believed that in a few years they would witness great activity.” The adoption of the report was agreed to, although a dividend of $1\frac{1}{2}$ per cent. was recommended. This was owing to the unproductive capital expended in the new works, which it is hoped will ultimately recoup the outlay.

ERRATA.—We are informed by the attentive Superintendent, Mr. Legge, that, in our notice of the Home for Apprentices at Liverpool, in the December (1874) number, an error was made in the designation of the ownership. It appears to be owned by Messrs. Balfour and Williamson, and that Messrs. Williamson, Milligan, and Co. merely make use of it on payment.—At page 1009, line 18, for the word “ export ” read “ import ” in the article on “ Milford Haven,” in the December number of this *Magazine*.

THE BESSEMER SALOON STEAMER.

IN our November number we gave a criticism on the gyroscopic controlling apparatus for the Bessemer saloon, stating that the strictures we recorded represented the opinions of Board of Trade surveyors. We have in another part of this number announced the result of the Commission of the Institution of Engineers and Shipbuilders in Scotland on Safety-Valves. They endorse all that the Board of Trade staff had initiated in reference to safety-valves, and adopt the formulæ the surveyors had investigated and published. It is very creditable to both parties that such an issue is the final outcome of the loud complaints of these same engineers and shipbuilders. We have now to give an illustration of the opinion which Mr. E. J. Reed's colleague in the construction of the Bessemer steamer, entertains of the scientific ability of the Board of Trade officers. They said his gyroscope would have no more steadying effect at five thousand revolutions per minute than it would have if the material of which it was composed were carried in the form of pig-iron at the same height in the ship. Mr. Bessemer has thereupon decided to carry it in as near the form of pig-iron as is practicable, and we have no doubt he has taken a wise step in doing so. He has, on the 10th December, filed, at the Patent Office, a complete specification of this plan. The weight is in the shape of a heavy, idle grindstone of iron, and it is to be carried, as suggested by the surveyors, at about the same height and, if possible, without rotation. Our readers may think this notice a piece of burlesque, but we assure them it is sober fact, and, having probably had some share in bringing the fallacy of his former plan under the notice of the public, we will also tell our readers what is now thought of the way in which he is about to carry out the suggestion about the pig-iron. It is thought it will be quite safe and will give no trouble in inspection. It would not exceed at the best a force equal to one-thousandth part of the weight of the grindstone with a leverage equal to its radius. From that has to come off the force required to overcome the friction on its roller supports, and the residue, which might be carried, probably, for a penny postage, can be applied to operate the valve. This is, however, much better than the so-called gyroscopic plan first proposed, which the Board of Trade officers pointed out to be no gyroscope. Comparing the grindstone plan with the gyroscope *correctly* applied, the result is as follows. With a gyroscope and a grindstone of equal weights the radius of the grindstone equal to the radius of gyration of the gyroscope; at the very beginning of the roll the grindstone plan is most effective, but, after a portion of

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time, equal to that required by the gyroscope rim to move through an arc equal to radius in length, the two plans are equally effective, and while the inert grindstone does not at all increase afterwards in effective action, the efficiency of the gyroscope increases in direct proportion with the time from the commencement of the roll up to the instant when the vessel is upright. If each of the wheels were one foot in radius, and if the velocity of the gyroscope were only 50 feet per second up to one-fiftieth part of a second, the inert grindstone plan would be most effective, but, after that instant, the gyroscope would become more and more effective until, when the vessel is upright, it would have fifty times the effective force of the other. Our remarks lead to the conclusion that the idle grindstone has only to be made large enough and heavy enough and without friction to prove a better steadier than the gyroscopic disc.

STEEL WIRE ROPES IN LIEU OF CHAIN CABLES AND TOWING HAWSERS.



ANY invention that is likely to prevent loss of life and property at sea has at all times our careful attention. We have therefore lately inspected some steel wire ropes manufactured by Messrs. Bullivant and Allen, of Millwall, Poplar, London, for ships' cables and towing hawsers, which possess many qualities well worthy of consideration by owners of large ships and by the Committees of the Register Books of London and Liverpool. The pliability of these steel wire ropes is remarkable, as will at once be admitted by our readers when they learn that a rope of 120 fathoms of $5\frac{1}{2}$ inches in circumference, that withstands the breaking strain of 100 tons, is easily coiled on a reel, the outside measurement of which, with the rope on, is 4ft. 3in. in height, by 2ft. 6in. in width. One of the most important advantages in these steel ropes is their perfect uniformity of strength throughout. This is a particularly forcible fact, when compared with the untrustworthiness of our present ships' chain cables, in which, of necessity, the strength of the whole cable is only just that of its weakest link. The evidence given on this point by Mr. Thomas Chapman, F.R.S., Chairman of the Committee of Lloyd's Register, before the Select Committee, in June last, on "The Chain Cables and Anchors Bill," is of the utmost importance to shipowners. It shows conclusively that *all* the chain cables tested at public testing machines, which the Committee of the Register Book are authorised to work under licenses from the Board of Trade—viz., at Tipton,

Saltney, Low Walke, and Netherton, for the first three months of the year 1874, gave an average result of one defective link in each $8\frac{1}{2}$ fathoms tested, and when it is borne in mind that each link of a chain has in it a weld, and that one defective weld is sufficient to render the cable useless, and thereby cause the loss of many lives and thousands of pounds sterling of property, any substitute for a chain cable that can be found possessing uniformity of strength is one that deserves most careful and serious attention. The fact that in each $8\frac{1}{2}$ fathoms of chain tested, one defective link is discovered, we take solely on the word of Mr. Chapman, for we are satisfied that he would not make any statement, whether to a Select Committee of the House of Commons or otherwise, that is not well known by him to be in accordance with the strictest and most unimpeachable accuracy. The fact that Messrs. Bullivant's wire cables will stand the tests they say they will, and the further fact that they are of uniform strength throughout we take from trials carefully made with proper machinery.

Besides the great advantages of pliability and uniformity of strength possessed by the steel wire cables, other greater advantages they possess when compared with *chain* cables are the great saving of weight for a cable of a given strength and the saving of cost. Thus, the Admiralty proof strain of $2\frac{1}{2}$ chain is 91 tons, and by the rules of Lloyd's Register a ship of 3,000 tons is required to be provided with 360 fathoms of cable of that size—the cable required by the rules of Lloyd's Register; chain which will weigh 45 tons, and cost about twelve hundred pounds sterling (£1,200); whereas, a steel wire cable of $5\frac{1}{2}$ in. in circumference withstands the breaking strain of 100 tons, weighs for 360 fathoms 5 tons only, and costs about £400. There is, therefore, a saving of 40 tons in weight, which means great space gained for cargo capacity, and a money saving in the first outlay of £800, whilst perfect security is gained by the strength of the wire cable being uniform throughout. For towing hawsers, the steel wire cables are much more pliable than hemp hawsers, and are only about one-third the weight for equal strength, whilst the cost of the steel wire rope is but about one-half of the hempen rope. The steel wire hawsers are kept coiled upon a reel or small winch fitted with a cog wheel and pinion, and when used for towing are passed through a nipper, which being worked with a powerful screw purchase enables one man to make it fast, at any desired length, at any moment. From this nipper, secured firmly to the deck, the ship tows, and the winch enables two or three men to heave in the towing hawser when let go from the steamer. The rusting of these steel wire ropes is prevented, first by galvanizing each wire separately before the rope is made up, and afterwards by keeping the rope by a very simple contrivance thoroughly oiled.

We learn that the Admiralty are about to give the steel ropes of Messrs. Bullivant a trial, and to use them for both ships' cables and towing hawsers. The towing hawsers have already been used successfully in the merchant service on board very large sailing and steamships. We shall watch the progress of this invention with great interest. We may also give a hint—viz., that these hawsers must be cheaper than chain cables for the reason that they are not required by law to be tested at a public machine. The testing Acts apply only to chain cables, and as these wire rope cables are no more chain cables than are hempen rope cables they come off scot free, and in their case trade will not be hampered. This is as the Royal Commissioners on unseaworthy ships say should be the case in all things connected with the equipment of ships, and it is to be hoped, not that the Legislature will require wire rope cables to be compulsorily tested, but that seeing that wire rope cables are not required by law to be tested, the existing Acts may be so modified as to place chain cables on the same footing.

LAST EXPERIMENTS ON SAFETY-VALVES.



WE are indebted to the Institution of Engineers and Ship-builders of Scotland for a series of the most interesting and exhaustive experiments and reports on safety-valves ever yet undertaken or published; and the Council of the Institution have placed the engineering talent of the day under further obligation, inasmuch as they have published, in the form of a pamphlet, everything likely to be of value. The Committee of Council appointed to consider and report upon this all-important subject, were Messrs. Walter Brock (Peter Denny & Co.), James Brownlee, J. L. K. Jamieson (John Elder & Co.), Eben. Kemp, H. R. Robson (Anchor Line), and David Rowan (David Rowan & Co.). These names are well known, and the conclusions in a report, guaranteed by the whole of their signatures, may, we think, be taken as final, and as "absolutely without appeal."

To comprehend fully the value of this report, and its important bearing on the whole question, we must begin by enumerating a few points, viz. :—

1. Until about fifteen years ago, it was not uncommon to find in marine boilers the proportion of area of safety-valves to fire-grate surface, as one inch to the square foot.

2. About fifteen years ago, the Board of Trade sanctioned the use of a rule which then met with the requirements of the trade, whereby the proportion of area of safety-valves to heating surface was to be not less than half an inch to the square foot.
3. Pressures have been very much increased since then, and much abuse, but little argument, has been aimed at the Marine Department of the Board of Trade for not, from time to time, certifying as sufficient much smaller safety-valves.
4. The action of the Board of Trade proves that they have for some years known well enough, through the experience and reports of its practical officers, that even the old proportion of one inch area of valve to one foot of grate surface was not enough to relieve the boilers with their then very low pressures, but also acted on the belief (see their circulars) that the present rule of half an inch to the foot did not require too large a safety-valve for modern high pressure boilers. The review of Mr. James Howden's paper, at page 941, *Nautical Magazine*, for 1872, is from the pen of a Board of Trade surveyor, and indicates that that department have little to learn from even this valuable report.
5. Those interested in saving steam and fuel, argued that the old proportion of valve area to fire-grate was enough for the old low pressures, and that, therefore, that proportion ought no longer to be maintained for modern pressures.
6. The Board of Trade, it seems, have stood firm, and have taken no notice of the wholesale charges brought against them of "hampering trade," "interfering capriciously," "vexatiously interfering," and so forth, with machinery, boilers, and safety-valves, but have left the users of steam, and abusers of the Board, to prove their own case, if they could.
7. The Institution of Engineers and Shipbuilders of Scotland, an impartial and scientific body, without views antagonistic to the Board of Trade, were moved by the spirit of truth to undertake the series of experiments, the report on which, they have now published.

We cannot, of course, reprint the whole of their valuable report, but we reproduce the following extracts, which practically contain the pith of it, so far as the outside world is concerned. The result of the whole investigation and experiments is, that the Board of Trade have been acting on proper advice in not reducing the areas of safety-valves, since at all pressures below seventy-two pounds the half inch rule gives too small a valve. It is satisfactory, also, to see that the Committee report that in their scientific conclusions they have been, in *every instance*, anticipated by

the Board of Trade staff. This corroboration is referred to in foot notes in the first part of the report, from which we have not quoted. The reaction formula adopted by the Committee was first published in this *Magazine* as a diagram, in March, 1872, and in the same month was given in algebraic form in *Engineering*, as a deduction by the Board of Trade staff, from fundamental principles and independent of experiments.

“ RESULT OF A SERIES OF EXPERIMENTS,—

made to ascertain the increase of pressure in a boiler when all the steam raised was allowed to pass away by the safety-valves unassisted. Two valves were used, the united area of which was half an inch per foot of grate surface. The boiler used was tubular, with 2 furnaces; the grate surface was 25 square feet; the heating surface, 746 square feet. The valves were each $2\frac{1}{8}$ inches diameter, the fuel used was ordinary good Glasgow dross, the firing good, and as nearly uniform during all the experiments as possible. The valves were loaded by direct weights. The following is table of results :—

Load on Valve.	Pressure rose to.	Increase per Cent.	Lift of Valve.	W. Lbs.
5 lbs.	13 lbs.	160·	·825	3·39
10 „	19 „	90·	·255	3·223
15 „	25 „	66·	·18	2·68
20 „	30 „	50·	·16	2·676
25 „	36 „	44·	·1425	2·7
30 „	40 „	38·	·1262	2·58
35 „	44 „	25·7	·1125	2·466
40 „	48½ „	21·	·103	2·437
45 „	52 „	15·5	·097	2·41

“ The valve seat being to an angle of 45 degrees,

$$W = \frac{8PL}{2 \cdot 8D}$$

W = Weight of steam discharged per minute per square foot of fire-grate.

P = Absolute pressure in lbs. per square inch.

D = Diameter of valve in inches.

L = Lift of valve in inches.

"TABLE showing the respective area of valve for the boiler in question, if made according to the Committee's recommendation, as compared with present practice in this country, and at the several undernoted absolute pressures :—

Absolute Pressure of Steam.	Areas of Valve as Recommended by Committee.*	Areas of British Valves.
20 lbs.	45· square in.	12·5 square in.
25 "	36· "	12·5 "
30 "	30· "	12·5 "
35 "	25·7 "	12·5 "
40 "	22·5 "	12·5 "
45 "	20· "	12·5 "
50 "	18· "	12·5 "
55 "	16·86 "	12·5 "
60 "	15· "	12·5 "
65 "	13·84 "	12·5 "
70 "	13· "	12·5 "
75 "	12· "	12·5 "

"Safety-valves of ordinary construction, if loaded by direct weight, do not allow all the steam to escape which can be raised in the boiler until the pressure has increased above that at which the valve opens, and an additional increase of pressure will take place when the valves are loaded by springs. That such has been the case in the past by dead-weight loading and imperfectly-proportioned valves is fully illustrated by reference to the foregoing experiments.

"The object in appointing this Committee was to investigate the cause of this increase of pressure, especially with boilers proportioned in strength to work at low pressures, and it is hoped that the result of these investigations will clearly show that the great cause lay in *using valves of too small dimensions*; and that with valves proportioned as proposed, properly constructed and loaded by springs, anything approaching a dangerous increase of pressure is entirely avoided.

[* Our readers will be satisfied to find that up to 70 lb., on the square inch, this Committee actually recommend *larger* valves than the Board of Trade ever required. This table would, therefore, hamper trade and increase the cost of navigation far beyond any legislative action taken in the matter.—Ed.]

"ON LOADING SAFETY-VALVES BY DIRECT SPRINGS.

"It has been shown that valves having half an inch of area per square foot of grate surface require to lift $\frac{2 \times \text{diameter of valve}}{P}$ in order perfectly to relieve the boiler; and if proportioned as is recommended in this report, then the lift would be in all cases $\frac{\text{diameter of valve}}{36}$.

"Having determined the requisite lift, it remains to fix any reasonable or desired percentage of the load, which is not to be exceeded by the additional load due to the compression or extension of the spring, caused by the lift of the valve. Let this, for example, be restricted to $2\frac{1}{2}$ per cent. of the original load.

"Then the spring loading the valve should be so proportioned that the compression or extension, to produce the initial load, shall be 40 times the lift of the valve.

"So that with valves having half an inch area per foot of grate surface, the initial compression or extension of spring would be = $\frac{80 \times \text{diameter of valve}}{P}$. With valves as recommended, the initial compression or extension would be $1.11 \times \text{diameter of valve}$. The following formula refers to spiral springs, made of steel in the usual way :—

E = Compression or extension of one coil in inches.

d = Diameter from centre to centre of steel composing spring in inches.

w = Weight applied in pounds.

D = Diameter or side of square of steel of which the spring is made in 16ths of an inch.

C = A Constant which, from experiments made, may be taken as 22 for round steel and 80 for square steel.

$$E = \frac{d^3 \times w}{D^4 \times C}$$

The total compression or extension of such a spring is equal to that of one coil into the number of effective coils, which may be taken as two less than the apparent number, the end coils being usually flattened to serve as bases for the spring to rest upon.

"The relation between the safe load, size of steel, and the diameter of the coil has been deduced from the works of the late Professor Rankine, and may be taken for practical purposes as follows :—

$$D = \sqrt[3]{\frac{w \times d}{8}} \text{ for round steel.}$$

$$D = \sqrt{\frac{w \times d}{4.29}} \text{ for square steel.}$$

"The application of the above formulæ may be illustrated by the following calculations of three different proportions of springs, all designed to give the same result. Diameter of valve, 4" = 12.5 area in square inches. Boiler pressure 60 lbs. per square inch. Omitting weight of valve, spindle, and spring; load required = $12.5 \times 60 = 750$ lbs. Then, assuming that this valve is in the proportion of half a square inch area per foot of grate surface, the lift of valve would be $= \frac{2 \times 4}{75} = .106$, say .1".

Initial compression of spring, $\frac{80 \times 4}{75} = 4.26$, say 4 inches.

"1st. Supposed diameter of spring, or d , equal 4 in. $D = \frac{\sqrt[3]{750 \times 4}}{3} = 10$, diameter of spring steel = 10-16ths. $E = \frac{64 \times 750}{10000 \times 22} = .218$ ".

Effective number of coils $\frac{4}{.218} = 18.3$, say 18. Pitch of spiral, allowing between each coil a distance equal to twice the intended compression = $1''.061$, say 1 inch; effective length of spring = $18 \times 1 = 18$ ", and allowing for two end coils as bases, say $19\frac{1}{2}$ ", = the length of spring before compression.

"2nd. Supposed diameter of spring, 6 in. $D = \frac{\sqrt[3]{750 \times 6}}{3} = 11.447$, say 12-16ths. $E = \frac{216 \times 750}{20786 \times 22} = .855$ ". Effective number of coils

required, $\frac{4}{.855} = 4.68$, say 11. Pitch of spiral, 1.46 "; effective length of spring $1.46 \times 11 = 16.06$ ", and allowing for two end abutment coils, say $17\frac{1}{2}$ " = the length of spring before compression.

"3rd. Suppose diameter of spring 12 in. $D = \frac{\sqrt[3]{750 \times 12}}{3} = 14.42$,

say 14-16ths. $E = \frac{1728 \times 750}{38416 \times 22} = 1.533$ ". Effective number of coils

required, $\frac{4}{1.533} = 2.61$. Pitch of spiral, 3.9 "; effective length of spring, $3.9 \times 2.61 = 10.17$ ", say 10", and allowing for two end abutment coils, say $11\frac{1}{2}$ " = the length of spring before compression.

"In cases where it is desirable or perhaps necessary to employ springs acting at the ends of levers, the same formulæ can be employed for determining the proportion of springs, bearing in mind that the lift of the end of the lever where the spring is attached, is to be taken instead of the simple lift of valve.

"ON LOADING SAFETY-VALVES BY DIRECT SPRINGS.

"It has been shown that valves having half an inch of area per square foot of grate surface require to lift $\frac{2 \times \text{diameter of valve}}{P}$ in order perfectly to relieve the boiler; and if proportioned as is recommended in this report, then the lift would be in all cases $\frac{\text{diameter of valve}}{36}$.

"Having determined the requisite lift, it remains to fix any reasonable or desired percentage of the load, which is not to be exceeded by the additional load due to the compression or extension of the spring, caused by the lift of the valve. Let this, for example, be restricted to $2\frac{1}{2}$ per cent. of the original load.

"Then the spring loading the valve should be so proportioned that the compression or extension, to produce the initial load, shall be 40 times the lift of the valve.

"So that with valves having half an inch area per foot of grate surface, the initial compression or extension of spring would be = $\frac{80 \times \text{diameter of valve}}{P}$. With valves as recommended, the initial compression or extension would be $1.11 \times \text{diameter of valve}$. The following formula refers to spiral springs, made of steel in the usual way:—

E = Compression or extension of one coil in inches.

d = Diameter from centre to centre of steel composing spring in inches.

w = Weight applied in pounds.

D = Diameter or side of square of steel of which the spring is made in 16ths of an inch.

C = A Constant which, from experiments made, may be taken as 22 for round steel and 30 for square steel.

$$E = \frac{d^3 \times w}{D^4 \times C}$$

The total compression or extension of such a spring is equal to that of one coil into the number of effective coils, which may be taken as two less than the apparent number, the end coils being usually flattened to serve as bases for the spring to rest upon.

"The relation between the safe load, size of steel, and the diameter of the coil has been deduced from the works of the late Professor Rankine, and may be taken for practical purposes as follows:—

$$D = \sqrt[3]{\frac{w \times d}{8}} \text{ for round steel.}$$

$$D = \sqrt[3]{\frac{w \times d}{4.29}} \text{ for square steel.}$$

"The application of the above formulæ may be illustrated by the following calculations of three different proportions of springs, all designed to give the same result. Diameter of valve, 4" = 12.5 area in square inches. Boiler pressure 60 lbs. per square inch. Omitting weight of valve, spindle, and spring; load required = $12.5 \times 60 = 750$ lbs. Then, assuming that this valve is in the proportion of half a square inch area per foot of grate surface, the lift of valve would be $= \frac{2 \times 4}{75} = .106$, say .1".

Initial compression of spring, $\frac{80 \times 4}{75} = 4.26$, say 4 inches.

"1st. Supposed diameter of spring, or d , equal 4 in. $D = \sqrt[3]{\frac{750 \times 4}{3}} = 10$, diameter of spring steel = 10-16ths. $E = \frac{64 \times 750}{10000 \times 22} = .218$. Effective number of coils $\frac{4}{.218} = 18.3$, say 18. Pitch of spiral, allowing between each coil a distance equal to twice the intended compression = 1.061 , say 1 inch; effective length of spring = $18 \times 1 = 18$ ", and allowing for two end coils as bases, say $19\frac{1}{2}$ " = the length of spring before compression.

"2nd. Supposed diameter of spring, 6 in. $D = \sqrt[3]{\frac{750 \times 6}{3}} = 11.447$, say 12-16ths. $E = \frac{216 \times 750}{20786 \times 22} = .355$. Effective number of coils required, $\frac{4}{.355} = 11.2$, say 11. Pitch of spiral, 1.46 "; effective length of spring $1.46 \times 11 = 16.06$ ", and allowing for two end abutment coils, say $17\frac{1}{2}$ " = the length of spring before compression.

"3rd. Suppose diameter of spring 12 in. $D = \sqrt[3]{\frac{750 \times 12}{3}} = 14.42$, say 14-16ths. $E = \frac{1728 \times 750}{98416 \times 22} = 1.533$. Effective number of coils required, $\frac{4}{1.53} = 2.61$. Pitch of spiral, 8.9 "; effective length of spring, $8.9 \times 2.61 = 10.17$ ", say 10", and allowing for two end abutment coils, say $11\frac{1}{2}$ " = the length of spring before compression.

"In cases where it is desirable or perhaps necessary to employ springs acting at the ends of levers, the same formulæ can be employed for determining the proportion of springs, bearing in mind that the lift of the end of the lever where the spring is attached, is to be taken instead of the simple lift of valve.

"The above illustrative calculations have all reference to springs made of round steel, and used in compression. In many cases, two or more springs, one within the other, may be used with advantage."

After consideration of the whole of the experimental information obtained, and the necessities required in practice, the Committee have come to the following conclusions:—

"1st. The present practice in this country of constructing safety-valves of uniform size for all pressures is incorrect.*

"2nd. The valves should be flat-faced, and the breadth of face need not exceed one-twelfth of an inch.†

"3rd. The present system of loading valves on marine boilers by direct weight is faulty, and ill-adapted for sea-going vessels, a considerable quantity of steam being lost during heavy weather, in consequence of the reduced effect of direct load—the result of the angle or list of the vessel, and also of the inertia of the weight itself, the latter not being self-accommodating at once to the downward movements of the vessel, and, moreover, the impossibility of keeping the valves when so loaded in good working order.‡

"4th. That two safety-valves be fitted to each marine boiler, one of which should be an easing-valve.

"5th. The dimensions of each of these valves, if of the ordinary construction, should be calculated by the following rule:—

$$A = \frac{18 \times G}{P} \text{ or } A = \frac{0.6 \times HS}{P}$$

A = Area of valve in square inches.

G = Grate surface in square feet.

HS = Heating surface in square feet.

P = Absolute pressure in lbs. per square inch.

"6th. The Committee suggest that only one of the valves may be of the ordinary kind, and proportioned as above, and that it should be the

[* Good. But as the Board of Trade rule is proved to be quite right for pressures between 70 lb. and 75 lb., and in favour of the steam user at lower pressures, is it worth while to alter it? If so, it must be on the ground that it should be altered for pressures above 75 lb.; but the committee have not shown in their Table what the sizes for those pressures should be. Surely, 75 pounds is a high enough pressure for any steamer to carry when lying at a quay. Whatever be the working pressure originally allowed on the boiler, the valves ought to be large enough to be safe when that pressure has been reduced to 75 pounds.—Ed.]

[† This recommendation is a wise one; and we already made it; and as there is not, and never has been, any rule against it, it will, probably, be adopted.—Ed.]

[‡ We are glad to read this paragraph. The *Nautical* has always been in favour of trying spring-valves, and was the first to take up this subject in earnest. We offered a prize for the best spring safety-valve, and awarded it to one with a direct spring.—Ed.]

easing-valve. The other may be so constructed as to lift one-quarter of its diameter without increase of pressure. Valves of this kind are now in use, and one such valve, if calculated by the following rule, would be of itself sufficient to relieve the boilers :—

$$A = \frac{4 \times G}{P} + \text{area of guides of valve,}$$

$$\text{Or } A = \frac{.188 \times HS}{P} + \text{area of guides of valve ;}$$

“This valve should be loaded, say 1 lb. per square inch, less than the easing-valve.*

“7th. As experience in the use of valves of this description is acquired, both may be of this kind, and one of them made to blow into the sea without any increase of pressure (as is illustrated by a diagram), from actual practice ; the other to be the easing-valve, and loaded 1 lb. per square inch in excess of the working valve.

“8th. If the heating surface exceeds 30 feet per foot of grate surface, the size of safety-valve is to be determined by the heating surface.

“9th. As boilers decay from age it is necessary gradually to reduce the pressure of steam, and the Committee recommend that valves should be made of a size to suit the pressure to which the boiler may ultimately be worked when it becomes old.

“10th. Springs should be adopted for loading safety-valves, and they should be direct acting where practicable.

“When levers are used, the friction of the joints will cause an extra resistance, and consequent increase of pressure, when the valve is rising, and a loss of steam through diminution of pressure before it will close.

“(Signed) WALTER BROCK, JAMES BROWNLEE, J. L. K.
JAMIESON, EBEN. KEMP, H. R. ROBSON,
DAVID ROWAN, *Committee.*”

We have given these extracts in connection with our point No. 7. We will now conclude by stating one point more.

8. A paper by Mr. James Howden, entitled, “The Board of Trade Rule on Safety-Valves,” read before the Institution of Engineers and Ship-builders in Scotland in 1872, and circulated extensively in pamphlet form under the auspices of the Institution, asserted that the Board of Trade required far too large safety-valves for the high pressures now generally carried in steamers. A review by a Board of Trade surveyor, in the *Nautical Magazine* for November, 1872, utterly

[* This is all very well, provided the Government valve is not the easing-valve. The Legislature require that the Government valve shall have an area not less, and a pressure not greater, than the ordinary valve.—Ed.]

demolished every assertion made in Mr. Howden's paper. Our reviewer regarded it as a paper produced by one having no knowledge of the dynamic principles of elastic fluids. Our reviewer reconstructed, according to the views held by the Board of Trade staff, the tables given erroneously by Mr. Howden. It is to settle these points that the Institution undertook and completed these experiments.

Mr. Howden had asserted that for all pressures given in his tables the Board of Trade rule required too large a valve, and he further said that at 65 pounds pressure, gross, the Board of Trade required 80 per cent. too much area. The members of the Institution, without a single dissentient, accepted Mr. Howden's paper as correct, and pledged themselves to agitate for a reduction in this (then said to be absurd) requirement of the Board of Trade. They said the Board ignored the true principles that regulated the escape of steam. The Board of Trade staff said, on the contrary, that they were right, and that the paper circulated by the Scotch Institution was totally wrong. The Board of Trade staff then said that at the above pressure, 65 pounds, and under the conditions laid down by Mr. Howden, the Board of Trade rule was exactly correct, and for all lower pressures it required too *small* a valve, and for all higher pressures it was a little in excess. The Scotch report now published is identically corroborative of the Board of Trade statement; but, having adopted slightly different conditions, it gives 72 instead of 65 as the gross pressure up to which the Board of Trade rule gives too *small* a valve.

The report is altogether ungenerously silent about Mr. Howden's very loud paper; but twice, in special footnotes, records corroborations of the formulæ that had been given by the Board's officer: and, finally, the report makes a recommendation which is the adoption of a formula constructed by Board of Trade surveyors to represent the tabulated Prussian law when this matter was before considered by the Board. The paragraph in *Engineering*, from which that formula is said to be taken, happens to be, with the table following it, a verbatim copy of a Board of Trade *official* document, obtained by *Engineering* from the Marine Department on applying for information about safety-valve practice. Further, there is not established in the whole report a single fact either by investigation or by experiment that was not actually in the possession of the Marine Department of the Board of Trade (long before these experiments were even thought of), being the deductions from original investigations, or the result of new experiments by their own officers. We think it would only have been graceful and manly had the Institution of Engineers and Shipbuilders recognised specifically in their report, that not only had the experiments shown them that larger safety-valves are required

than they had formerly contended, but that they had also now at last learnt, that the Board of Trade had been right in their practice, and had all along known more about the true principles of the action of safety-valves than the reporters had given them credit for. In fact they might, had they been so disposed, have said with complete truth that, however deep the Committee had been able to go into the subject, they found at every point that the Board of Trade staff had been there before them.

CORRESPONDENCE.

SHIPS' COMPASSES.

To the Editor of the "Nautical Magazine."

DEAR SIR,—An article in your December number, entitled "A Suggestion.—Ships' Compasses," seems to me so completely inadequate to fulfil the object the writer professes to have in view, that I feel quite sure you will grant me space for a few remarks upon the article in question. Briefly expressed, "J. M." advocates the appointment of a Government inspector in every port, in order to examine British ships, and certify that they are supplied—

- 1st. With good compasses.
- 2nd. That they are properly placed.
- 3rd. Carefully compensated.
- 4th. And a good deviation card supplied.

For the purpose of tracing out the adequacy or inadequacy of this proposition to facilitate the navigation of iron ships, we will assume that "J. M.'s" suggestions have become law; that the inspector is a competent man; one every way well calculated to carry out his instructions, leaving no margin for human weakness, or personal bias in regard to favourite manufacturers. We will, at the outset, grant perfection to the proposed system; and now we will pass on to a brief explanation of the difficulties to be overcome.

The earth's horizontal force is a gradually diminishing quantity, passing from its maximum at the magnetic equator to its vanishing point at the magnetic poles. The earth's vertical force is also similarly affected, with this difference, that the vertical force obtains its maximum at the poles and vanishes at the magnetic equator; both these elements, therefore, combine to change the deviations of an iron ship the moment any change is made in the magnetic latitude. Now, it is quite evident that if the ship's local attraction possesses sufficient power to deflect a

compass-needle 10° at the magnetic equator, where the horizontal force is most powerful, it will produce a much larger deflection whenever the ship passes towards the poles, for although the earth's magnetic intensity changes from 1 at the equator to 2.8 at the poles, it must be borne in mind that the horizontal force is a diminishing quantity, and the magnetic poles are its vanishing points. A similar difficulty exists in regard to the transient induced magnetism in vertical iron, for while the deflections produced by the subpermanent magnetism varies inversely as the earth's horizontal force, so, also, the deflections produced by vertical iron vary according to the natural tangent of the dip. The Admiralty manual briefly expresses deviation to equal $A + B \text{ sine of the azimuth,} + C \text{ cosine of the azimuth,} + D \text{ sine of twice the azimuth,} + E \text{ cosine of twice the azimuth,}$ and in this expression A is the constant deviation due to imperfect compass construction, and such errors as "J. M." seeks to guard against; B and C represent the maximum semicircular deviation, and D and E the quadrantal deviation. From the Admiralty manual it can be very easily demonstrated that a ship leaving England, with n° of deviation, will (upon her arrival in the Gulf of St. Lawrence) find that her compass errors, due to vertical induction, will have increased in the proportion of 2.5 to 4.7. Similarly, the earth's horizontal force decreasing from 1 to 0.65, the compass errors due to the subpermanent magnetism will be found to have increased in the same ratio, therefore, the maximum semicircular deviation will be nearly doubled in amount. Now, Mr. Editor, is it reasonable to suppose, that any shipmaster, capable of resolving the magnetism of his ship into its various components, will quietly submit to the dictum of a Government inspector in regard to what compass he shall buy, or where he shall put it, or how he shall compensate it. Either the present average shipmaster is competent to surmount the difficulties attending the navigation of iron ships, or he is not competent. If competent, why interfere with him? If not, will the proposition of "J.M." be likely to make him so? The utmost an inspector can do will be to assist the incompetent off a well-lighted coast (where there are plenty of lifeboats. in case of accident) leaving him to blunder his way across the ocean, and finally effect a grand smash in some remote corner of the world. "The good deviation card" may last the shipmaster for a day; but who will guarantee it longer.

The tendency of the age appears to me, Mr. Editor, to point to a general shirking of responsibility, transferring everything from the shoulders of the individual to the Government. One shipmaster cannot be proved to be incompetent, but forthwith there arises a cry for Government interference, as though the whole profession were in fault. The wisest statement I have yet seen, in regard to these legislative enactments, emanated from the lips of one of the Royal Commissioners, and that was, "Rab

all these enactments out, and begin anew." Let the free spirit of inquiry have full room to grow and evolve itself, and then I have not the least doubt that shipmasters will be found, not only competent to command their ships, but also command themselves, and at the same time possess sufficient principle, unwatched and uninspected, to perform their duties faithfully.—I am, my dear Sir, yours respectfully,

H. C. W.

PROJECTED DOCKS IN SOUTH WALES.

THE vast development which is taking place in the South Wales coal trade, renders it a necessity that further harbour and dock accommodation should be provided. There are about sixty or seventy new sinkings taking place in the coal-field. It is estimated that, in the course of another year, about 4,000,000 tons additional to the present output, will be brought to bank. The amount of coal transported inland is insignificant in the district compared to the quantity which is exported. It is, therefore, obvious that further facility must be created at the ports to meet the increase of business. The Marquis of Bute has obtained parliamentary powers to construct another large dock of 56 acres, in addition to the 80 acres he already possesses. This is not, however, deemed sufficient by the merchants and coal-shippers at Cardiff, who have, in the form of a deputation, urged the Taff Vale Railway Company to increase their dock accommodation at Penarth. It is fully thought that this will be done by application to Parliament next year. More than this, attempts are being made to float a company to construct two large docks at Barry Island, or rather inside of that island. The plans have been prepared, and it is proposed to connect the docks with the Taff Vale Railway, *viâ* Penarth, on the one side, and with the Great Western system, *viâ* Cowbridge, on the other. Both railways are within a few miles already of the place. Barry is a famous spot. It is known as the home of the famous Giraldus Cambrensis, sometimes called Gerald Barry or Du Barry. About a year ago an exploration was made there by a few scientific gentlemen, and a cyst was discovered containing human bones; it was of iron and about 2 feet by 1½ feet in dimension. Probably it contained the remains of an ancient British chief who had been "cremated." For a long time it was in the hands of the Crawshays, but recently was bought, at auction, by an enterprising Cardiff trades-

man for £7,500. If docks are made there it will be a bargain at that sum, although at present it is little more than a rabbit warren.

Another scheme which is projected is to develop the harbour of Aberthaw, which is situated a little further to the west than Barry, both being creeks in the port of Cardiff. The Midland Railway Company have long been desirous to reach the Bristol Channel. They have now running powers as far as Brecon, and propose to purchase the Cowbridge line. In the meantime, they have sent their engineers to survey the neighbourhood, and especially with a view to make docks or develop the harbour of Aberthaw, should the transaction be closed. A considerable trade was done at one time at that little place, especially with Bristol, but since the great facilities have been developed at Cardiff that business has vanished; and now little else is done there by shipping except to remove the limestone which lies on the beach, and which is much prized.

OCEAN WAVES.—At the annual *conversazione* of the Royal Society of Victoria, held at Melbourne on the 27th of August, the president Mr. Ellery, in delivering the annual address, noticed the papers which had been read during the year. He referred at some length to Mr. R. S. Deverell's papers on ocean-wave power machinery, and said that some months ago Mr. Deverell devised apparatus by which the movements of a ship at sea could be registered; and observations were made with it by his brother, who went to England in the *Norfolk*. The duration of the voyage was 2,026 hours, and in that time the ship made 1,764,088 beam oscillations or rolls, and 1,041,137 fore-and-aft oscillations or pitches. The average number of oscillations in both directions per minute was 14. The average of pendulum registering beam movements was over 15 million degrees, while that of the fore-and-aft movements was nearly 5 million degrees. Mr. Deverell considered that he had established:—1. That between ocean limits the swell of the ocean is unceasing. 2. That the oscillation of a vessel in an ocean fetch is unceasing. 3. That the motion of an independent body within a ship on the ocean is unceasing. Here, then, is an immense amount of conservable energy. Can it be conserved for use on boardship? Mr. Deverell said he believed it could be made useful in auxiliary propulsion, and that he hoped to be able soon to bring before the Royal Society of Victoria a method of putting his proposition into practice. Mr. Ellery stated that Mr. Bessemer had purchased from Mr. Deverell the instrument used in the *Norfolk* voyage observations.

REPEAL OF COMPULSORY SURVEYS.

Wz have been asked by some of our readers on what assumption we proceeded when we stated (page 984, vol. xliii.) that the British Legislature is not likely, at once, to repeal the compulsory survey of passenger steamers, under the Act of 1854. Our answer is, that we proceeded on no assumption at all. What we stated is a logical deduction from facts within our knowledge. That we are not wrong, is clear from Mr. Farrer's own statement (see answer 18,882, p. 871 of Report), that "I know that if you proposed to the House of Commons to repeal the law, as to passenger steamers, you would have great difficulty." In such good company we have no fear of being wrong. The only question now is for the good shipowner and the public to watch how far the Board of Trade will be subjected to pressure to convert these compulsory surveys gradually into shams, so as to prevent disputes between owners and their surveyors. The Mercantile Marine Service Association, of Liverpool, have proposed measures which will, if adopted, convert wreck inquiries into shams ; and there is nothing to prevent any organization from being formed, whereby, under cover of the cry of " hampering trade," attempts may be made to convert these present surveys into future shams. It would, if successful, be the means of giving all low class ships certificates as good as the best class of ships. The mere " walk round " system of survey would, we are satisfied, suit many ships better than anything else, and would protect them from scrutiny under the Acts of 1871 and 1878. If some ships can get their papers without being harrassed, and thereupon be freed from future harrassment, too, they will get all the advantages of first-class certificates without any of the cost or trouble, or any of the security, now necessary to procure it. This will admit of free trade, but it will be free trade with a false certificate, a lie, and a delusion, and a perfect ousting of personal responsibility into the bargain. Let our readers just think what it means, not only a certificate procured under the Act of 1854, but also perfect immunity, while that certificate lasts, from the operations of the Acts 1871 and 1878. It will be better for the safety of the lives of the public to repeal the compulsory survey clauses at once, than run such a risk as we have pointed out above. That an agitation is probable, we have no doubt, and that it will probably commence in the interests of low class boilers, and low class iron ships, we believe. The underwriters must look out for themselves ; but we mean to keep a sharp look-out in the interests of our readers, who in this country are responsible and respectable first-class shipowners, and masters, and the public, and who abroad are the purchasers or the users of ships and boilers built in this country.

HYDROGRAPHIC.

PACIFIC OCEAN.—NORTHERN PART.

THE following information has been received from the United States Hydrographic Office, 1874 :—

Dowset Reef, on which the whaling brig *Kamehameha* struck in 1872, is about 8 miles long (in a north-west and south-east direction) and 4 miles broad ; in some parts the reef is awash and the sea breaks all over it. The position of the centre of the reef, as determined by the master of the *Kamehameha*, is in latitude $25^{\circ} 18' N.$, longitude $170^{\circ} 38' W.$, and about 13 miles South of Maro reef.

Reported Island, Decker, the existence of which has hitherto been considered doubtful, was searched for by the United States' ship *Tuscarora*, Commander G. E. Belknap, under favourable conditions of weather. The vessel sounded in 2,870 fathoms mud, in latitude $23^{\circ} 17' N.$, longitude $162^{\circ} 58' E.$, a position about 5 miles south from the assumed locality of the island, when no sign of land could be seen from the mast-head, and the entire absence of birds strengthened the opinion that no land exists in the vicinity.

Marcus Island.—This island, according to Commander Belknap, is about 60 feet high, and appeared when first seen like a forest of trees rising out of the water. With Marcus island bearing S.W. $\frac{1}{4}$ W. distant 8 miles, observations were taken and the island was found to be in latitude $24^{\circ} 14' N.$, longitude $154^{\circ} 0' E.$

Reefs extend a considerable distance off the east and west ends of the island, and a high white beach, occasionally broken with large black rocks, fringes the shore. The surf was very heavy, and landing seemed impossible on the northern side. Great numbers of birds were flying over the land.

At night or in thick weather vessels should give Marcus island a good berth.

Southerly currents had been experienced three days previous to sighting the island, but the general direction of the current in this locality is to the W.S.W.

Kingman Reef.—In June, 1874, the British steamship *Tartar* struck on a coral reef which is considered to be identical with Kingman reef situated in latitude $6^{\circ} 24' N.$, longitude $162^{\circ} 22' W.$ The shoal, none of which showed above water, appeared to be of considerable extent and in the shape of a horseshoe. The vessel was found to be in a lagoon enclosed by a network of coral reefs.

In this locality reefs have been frequently reported, varying but little in position, in latitude, but considerably in longitude, and it is probable

that different positions have been given to the same reef, and that the error has been caused by incorrect reckoning and strong currents. Until this locality has been more thoroughly examined, great precaution should be taken in its navigation.

Kingman reef is situated in the belt traversed by the equatorial counter current setting to the eastward, which current in this part attains a strength of 30 to 42 miles a day.

Palmyra Island, which has been surveyed by Commander J. S. Skerrett, commanding United States' ship *Portsmouth*, 1874, consists of many small islets occupying a space of 14 miles east and west and 7 miles north and south. The several islets, which enclose three distinct lagoons, are low, the most elevated being only 6 feet above the level of the sea, and covered with cocoa-nut trees. From a distance the islets appear as a group surrounding a single lagoon. The position of the observation spot, near the south-western islet, is in lat. $5^{\circ} 49' 4''$ N., long. $162^{\circ} 11' 29''$ W.

Breakers extend a mile from the north-east and south-east islets; and on the north side of the group, the sea sometimes breaks in 5 fathoms. On the eastern side, the current combined with fresh easterly winds creates an overfall; but there is no known danger outside the breakers on the eastern side.

Anchorage.—It is dangerous to approach Palmyra island from the northward or westward; the safest approach is from the southward. A vessel may stand safely in by keeping Strawn island, on which the huts are erected, bearing N.E. by N., and run in until Bird island bears E. by N., when she may anchor in 7 fathoms. The water shoals rapidly from 30 fathoms.

Tides.—It is high water full and change at 5h. 23m.; springs rise 2 feet.

Weather.—Mr. Strawn, a resident, stated that during the five months he had been on the island the rain was almost constant, four days of dry weather being the longest interval on any one occasion. There is no evidence that the island is visited by storms, but strong squalls sometimes blow from the east and south-east.

Supplies.—A few people are living on Strawn island (north-west end of the group), engaged in curing cocoa-nut fruit. Fish are abundant, and in great variety; turtle scarce; curlew, snipe, and plover were found. On one of the eastern islets there is a small pool that generally contains rain-water.

Samarang Islets.—Two days were spent by the U.S. ship *Portsmouth*, in search for these islets without finding them, and without seeing any indications of shoal water. It is, therefore, probable that Samarang islets and Palmyra island are identical, as their recorded descriptions closely agree.

WEST INDIES.—HAITI OR ST. DOMINGO.

The following information, by Commander A. V. Reed, United States Navy, has been received :—

NORTH COAST.—MONTE CHRISTI BAY.

Phaeton and Liverpool Shoals. — These shoals have been lately examined, and are found to lie in a line N.W. $\frac{1}{2}$ N. from Fraile islet, which lies about 80 yards to the N.W. of Granja point. Phaeton shoal is a little over 2 miles distant from the islet, and Liverpool shoal two-thirds of a mile further out.

Phaeton shoal is $1\frac{1}{2}$ cables long, east and west, and one cable broad, with a depth of $8\frac{1}{2}$ fathoms.

Liverpool shoal is $8\frac{1}{2}$ cables long, E.N.E. and W.S.W., and one cable broad, with a depth of $2\frac{1}{2}$ to 4 fathoms.

About half a cable north of the eastern end of Liverpool shoal is a much smaller shoal, having a depth of 5 fathoms and 10 fathoms close to it.

Fraile islet is an excellent landmark ; there is no passage even for a boat between the islet and the main.

Cabras Island, lying about 3 cables S.W. from Granja point, has low bluffs at its north and south ends, is low in the middle, and difficult to distinguish when approached from the westward. A rocky cay lies S. by W., three-quarters of a mile from the island ; inshore of an imaginary line joining Cabras island and the cay, the water shoals from 5 fathoms gradually towards the shore. There is a depth of 6 or 7 fathoms half a mile to the westward of the cay.

A shoal with $2\frac{1}{2}$ to 4 fathoms lies about a mile S.W. by W. from Cabras island, and S.E. by E. $\frac{1}{2}$ E. from the rocky cay just mentioned.

Anchorage.—There is good anchorage, with smooth water, between Cabras island and the rocky cay, lying to the southward of it.

Reef.—About a mile N.N.E. from the eastern end of Granja hill is the extremity of a breaking reef, which extends W.N.W. from the eastern side of Jicaquito bay and protects it. There is a depth of $4\frac{1}{2}$ fathoms in the bay, but the eastern side is very shoal. In entering, it is necessary to keep over toward Granja hill.

WEST COAST.—CAYEMITES BAY.

The peninsula of Bec-a-Marsoin will be readily recognised by the deep bay at the back. The shores of the peninsular consist of perpendicular rocky cliffs, about 20 feet high, much worn and fissured by the sea, and having occasional sandy patches. In shore of the cliff is a low table land covered with dense foliage, decreasing in height towards Fantastique point, which is low, rocky, and projects to the northward. The mainland is mountainous.

There is a small shallow bay situated $8\frac{1}{2}$ miles to the westward of Bec-a-Marsoin, at the bottom of which is a short sandy beach, the only landing place to the eastward of Fantasque point. There is a small fishing village near the beach, but no protection for vessels.

Au Bas Village.—The village of Au Bas is situated half a mile to the westward of Fantasque point.

Reef.—From the shore of the village of Au Bas a reef extends to the west and W.N.W., a distance of 8 miles, narrowing the channel between the reef and Great Cayemites island to three-quarters of a mile. The eastern part of the reef dries at low tide, and shows only a few black heads at high water, the western part of the reef has several heads with only 2 fathoms water; but there are places where the reef may be crossed in 8 fathoms.

A quarter of a mile to the south-west of Au Bas, and to the southward of the reef just mentioned, is the first of a chain of small islands, covered with low mangrove bushes, and extending along the shore to the south-west for the distance of a mile. Between the islands and the main there is a boat passage.

Pestal.—Nearly 6 miles W.S.W. from Au Bas is Pestal, a town of some importance, situated in a small inlet between high hills. Very little of the town is visible from the sea, only two or three houses on the beach and a few more on the top of the hill.

In the channel between Great and Little Cayemites islands there are only 2 fathoms water.

Directions.—In entering Cayemites bay from the eastward, keep about 3 cables distant from the shore of the peninsula, no bottom at 20 fathoms will be found at that distance. As already mentioned, the channel between Great Cayemites and the reef extending off Au Bas is three-quarters of a mile wide, and has from 8 to 5 fathoms. There is deep water within 3 cables of Fantasque point, and 10 fathoms at a mile west of it.

Anchorage.—The first secure anchorage westward of Bec-a-Marsoin point is in 7 fathoms, with Fantasque point bearing E. by N. and the western end of the chain of islands extending from Au Bas, bearing S. by E. In this berth the reef with only 2 or 3 fathoms water is about a cable distant; do not shoal less than 5 fathoms, as the soundings are irregular.

SOUTH COAST.—MESTE BAY.

Mella Bank.—This bank is found to have much changed, and now consists of four shoals lying between the meridian of Toulan point (the eastern point of the entrance to Flamand bay) and that of Boyet point (the eastern point of the entrance to Meste bay). They are all of small extent, steep to, and when the sun is shining brightly may be seen

from aloft. It is probable that the bank is still changing. The outer shoal is about $1\frac{1}{2}$ miles from the shore.

The western shoal has a depth of 12 feet and lies S.E. $\frac{1}{4}$ S., nearly a mile from Toulan point, and S.W. by W. $\frac{1}{4}$ W. from Boyet point.

The other three shoals lie within three-quarters of a mile of each other. The middle and largest one is nearly circular, about a quarter of a mile in diameter, has 6 feet on its shoalest part, and bears from Boyet point S. by W. $\frac{1}{4}$ W. $1\frac{1}{2}$ miles distant, and from Toulan point E.S.E. The eastern shoal has 12 feet water and bears E.N.E., 8 cables from the largest shoal. The remaining shoal has 12 feet and bears N.W. $\frac{1}{4}$ N., 3 cables from the last-mentioned shoal.

By keeping $1\frac{1}{2}$ miles off shore a vessel will pass in 7 fathoms clear of all dangers, no shoals nor rocks having been found south of this limit. Passing half a mile outside the line of the headlands will lead through the channel between Mella bank and the main, but in using this channel the lead should be kept constantly going as the soundings are very irregular.

The pilots are not well acquainted with this locality.

AQUIN BAY.

Cay Ramier is now connected with the small cay lying to the westward by a beach of sand and coral. Shoal water, from $4\frac{1}{2}$ to 8 fathoms coral, extends half a mile W. $\frac{1}{4}$ S. from the west end of the small cay mentioned. Short spits project from its north-east and north-west points.

The remarkable barren white hill said to be on *Cay Ramier* was not seen.

Kansas Shoal.—A coral shoal recently discovered by the *Kansas* lies S.W. $\frac{3}{4}$ W., $1\frac{1}{8}$ miles from the eastern end of *Cay Ramier*. It is 6 cables long N.E. and S.W., about 4 cables broad, and has from 4 to 24 feet over it; the water shoals suddenly from 9 and 10 fathoms to 3 and 4 fathoms on the edge of the reef. In smooth water there is a small and scarcely noticeable roller over the shoalest spots.

Seven cables N.W. from the shoalest part of *Kansas shoal* is a small coral head of 12 feet with deep water all round.

JAPAN.—NIPON, EAST COAST.

SENDAI BAY.

The following information relating to Sendai bay has been received from Captain H. C. St. John, R.N., H.M.S. *Sylvia*, 1874:—

On approaching Sendai bay, the sharp wooded summit of Kingkasan island, 1,000 feet high, will be a conspicuous object:—

The group of islands in the N.W. corner of Sendai bay should not be approached nearer than 2 miles, as reefs and rocks extend off them to a considerable distance, and there is no anchorage even for a small vessel on the western shore of the bay.

Anchorage.—Cape Amitsihama, the east point of Sendai bay, has deep water close to, and may be passed within two cables; soundings in from 16 to 19 fathoms will be found between the cape and Nagasima island, and anchorage for the largest ships may be obtained in from 12 to 9 fathoms, sand, off the north end of the island.

On the shore of the mainland, abreast the north end of Nagasima island, there is a bay half a mile wide, which affords anchorage in from 7 to 9 fathoms, mud. The bay may be recognized by its having the only white sandy beach in the vicinity, and from a wooded islet lying off its northern point.

Both these anchorages afford shelter from north and east winds, but a heavy sea is thrown in by winds from east round southerly to N.W.

Kingkasan Island is bold, and may be passed close to, and there is a ship passage between the island and the main shore.

Nagasima Island.—A single rock which dries, lies east two cables from the southern extreme of Nagasima island.

Light.—Kitakami light consists of a lantern similar to a ship's mast-head light, and being in front of the town, it can with difficulty be distinguished from the lights of the houses and junks.

UNSEAWORTHINESS OWING TO SEASON OF THE YEAR.—CAUTION.—The following letter has been written by the Board of Trade on this subject:—
 “Board of Trade, Whitehall Gardens, December 2, 1874.—Sir,—I am directed by the Board of Trade to transmit to you copy of the Report of Inquiry, held at Ardrossan, into the circumstances attending the loss of your paddle-steamer *Chusan*, at the entrance to Ardrossan Harbour, on the morning of the 21st ult. From this report, and from the evidence given before the Court, the Board are advised that the conclusion may be drawn that vessels of the *Chusan* class are not safe and seaworthy for an ocean voyage from this country at all seasons of the year. The Board of Trade trust that you will not overlook this expression of opinion, as it may be their duty to interfere, under the Acts of 1871 and 1878, with the attempted sailings of similar vessels from Ports of the United Kingdom, on long voyages, unless commenced at seasons when there is a reasonable prospect of the vessels arriving at their destinations without encountering very heavy weather during the passage.—(Signed) THOMAS GRAY.”

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
1	JAPAN—Nipon—South Coast—O6-sima	Sunken Rock off O6-sima.
2	CHINA—East Coast—Han River	Sunken Rock in Port of Swatow.
3	CANADA—Lake Erie—North Foreland or Long Point Light	Alteration in Light.
4	AUSTRALIA—East Coast—Capricorn Group	Discovery of a Coral Patch.
5	AUSTRALIA—East Coast—Cumberland Islands—K 4½ Isle	Discovery of a Coral Reef.
6	AUSTRALIA—East Coast—Cumberland Islands—Sir James Smith Group	Discovery of a Rock.
7	AUSTRALIA—East Coast—Halifax Bay	Discovery of a Sunken Reef.
8	AUSTRALIA—North Coast—Z Reef	Discovery of a Coral Patch.
9	BLACK SEA—Crimea—South Coast—Yalta Roads	Establishment of a temporary Light.
10	ADRIATIC—Brazza Island—Speco Point	Intended Establishment of a Light.
11	NOVA SCOTIA—South Coast—Bon Portage Island	Establishment of a Light.
12	NOVA SCOTIA—South-east Coast—Blind Sisters Shoal	Establishment of a Bell-Buoy.
13	NOVA SCOTIA—Sambro Ledges—S.W. Breaker	Establishment of a Buoy.
14	CAPE BRETON ISLAND—Little Bras D'Or Lake—Unische Point	Establishment of a Light.
15	CAPE BRETON ISLAND—Great Bras D'Or Lake—M'Kenzie Point	Establishment of a Light.
16	UNITED STATES—Virginia—Winter-Quarter Shoal	Establishment of a Light-vessel.
17	BALTIC—Stockholm Entrance—Svenska Hogar	Exhibition of a Light.
18	GULF OF BOTHNIA—Ratan Harbour	Exhibition of two Lights.
19	IRISH CHANNEL—Isle of Man—Chicken Rock	Establishment of a Light.
20	IRISH CHANNEL—Calf of Man	Discontinuance of Lights.
21	ENGLAND—East Coast—Outer Gabbard Shoal	Alteration in Buoy.
22	RIVER THAMES ENTRANCE—Long Sand Head	Alteration in Buoy.
23	MEDITERRANEAN—Bonifacio Strait—Lavezzi Rock	Destruction of Beacon.
24	MEDITERRANEAN—Italy—Brindisi	Establishment of a Light-vessel and Discontinuance of a Light.
25	CAPE BRETON ISLAND—Little Bras D'Or Entrance—Anconi Point	Establishment of a Light.
26	CAPE BRETON ISLAND—Bridgeport—Lingan Head	Establishment of a Light.
27	CAPE BRETON ISLAND—Madame Island—Cape Round	Establishment of a Light.
28	CAPE BRETON ISLAND—Lennox Passage—Ouetique Island	Establishment of a Light.
29	CAPE BRETON ISLAND—Creighton Island—Creighton Head	Establishment of a Light.
30	BALTIC—Dagü—North Ristna Point	Intended Establishment of a Light.
31	BALTIC—Prussia—Frische Haff—Frauenburg	Alteration in Light.
32	BALTIC—Prussia—Rixhöft	Establishment of Additional Light.
33	NORTH SEA—Elbe River	Riding Lights to Light-vessels.
34	MEDITERRANEAN—Greece—Marathonisi	Temporary Suspension of Light.
35	GULF OF ST. LAWRENCE—Percé Bay—White Head	Establishment of a Light.
36	GULF OF ST. LAWRENCE—Magdalen Islands—Grindstone Island	Establishment of a Fog-Signal.
37	AUSTRALIA—East Coast	Reported Dangers.
38	TORRES STRAIT—Flinders Passage	Reported Reef in.
39	TORRES STRAIT—Albany Rock	Reported Sand Bank near.
40	UNITED STATES—Gulf of Mexico—Timballier Island	Establishment of a Light.
41	NORWAY—West Coast—Trondhjem Approaches—Börö	Establishment of a Light.
42	NORWAY—Christiania Fiord—Fulehuk Light-house	Alteration in Fog-Signal.
43	NORWAY—South Coast—Tvesteen Island	Erection of Beacons.
44	NORTH SEA—Jutland—Graa Deep—Esbjerg	Establishment of Harbour Light.
45	NORTH SEA—Jutland—Lim-Fiord—Thybo Rön Channel	Alteration in position of Light-vessel.
46	BALTIC—Sweden—Kalmar Sund—Demman Shoal	Establishment of a Light.
47	BALTIC—Sweden—Kalmar Sund—Furö	Exhibition of Light.

NAUTICAL NOTICES.

1.—JAPAN.—*Nipon, South Coast.*—*Oō-Sima.*—The following information has been received relative to the Kami-Seh rock, lying off Oō-sima, and heretofore reported as having $4\frac{1}{2}$ fathoms on it, viz.:—The rock lies N.E. $\frac{1}{4}$ E. $1\frac{1}{2}$ miles from Oō-sima lighthouse, and has 16 feet on it at low-water springs, with 17 and 19 fathoms close to.

Note.—Itsimo-sima just touching Omi-saki rock, bearing W. $\frac{3}{4}$ N., leads well south of the rock.

2.—CHINA.—*East Coast.*—*Han River.*—*Swatow.*—Information has been received of the existence of a sunken rock lying off Kakchio, Port of Swatow. This rock (*Madras rock*) has 8 feet water on it at low-water springs, and lies with Botterfurh rock, bearing E. by N.; English Consulate flag-staff, S.E. by E. $\frac{3}{4}$ E.; Extreme of Western pier, S.E. by S., distant $1\frac{1}{2}$ cables.

8.—CANADA.—*Lake Erie.*—*North Foreland or Long Point Light.*—This light has been changed from a fixed white light to a revolving white light, showing a flash every minute.

4.—AUSTRALIA.—*East Coast.*—*Capricorn Group.*—The master of the steam vessel *Florence Irving*, reports having passed over a coral patch (*Irving reef*) westward of Masthead island, Capricorn group, with apparently not more than 2 to 8 fathoms on it, Masthead island at the time bearing E. $\frac{3}{4}$ N., distant $5\frac{1}{2}$ miles. This bearing and distance places the reef in lat. $28^{\circ} 21' S.$, long. $151^{\circ} 58' 20'' E.$

5.—AUSTRALIA.—*East Coast.*—*Cumberland Islands.*—*K. $4\frac{1}{2}$ Isle.*—The master of the ship *Lady Douglas* reports that K. $4\frac{1}{2}$ isle is connected with the sand lying to the westward of it, by a coral reef which dries at low water.

6.—AUSTRALIA.—*East Coast.*—*Cumberland Islands.*—*Sir James Smith Group.*—The master of the schooner *Io* reports the existence of a rock (*Io rock*) which dries at half tide, lying one mile from the western shore of the largest of Sir James Smith group, Cumberland islands. From the rock Linné peak bore east, northerly. This bearing, and the distance from the shore, places the rock in lat. $20^{\circ} 40' S.$, long. $149^{\circ} 10' E.$

7.—AUSTRALIA.—*East Coast.*—*Halifax Bay.*—The master of the schooner *Marchioness of Lorne* reports the existence of a sunken reef (*Lorne reef*) lying about $1\frac{1}{2}$ or 2 miles W.S.W. from the north-west point of Rattlesnake island. This bearing and distance places the reef in about lat. $19^{\circ} 2' S.$, long. $146^{\circ} 35' E.$

8.—AUSTRALIA.—*North Coast.*—Information has been received of the existence of a coral patch lying $1\frac{1}{2}$ miles north-westward of Z reef, off Kennedy river, and in the fairway of the inner passage to Torres

strait. The patch *Harrington shoal* extends about 200 yards in a north and south, and 100 yards in an east and west direction, and has 12 feet water on its shallowest part. From the shoal in 4 fathoms the following bearings were taken, viz.:—West high summit of Turtle island, south; west summit of Albany rock, S.W. $\frac{1}{2}$ W.; and summit of Albany island, N.W., westerly. The shallowest part of the shoal bore N. $\frac{1}{2}$ E., distant 100 yards. These bearings place the shallowest part in lat. $10^{\circ} 47' 40''$ S., long. $142^{\circ} 42' 15''$ E.

9.—BLACK SEA.—Crimea.—South Coast.—Fatis Roads.—A temporary light is now exhibited on Kikisi point. The light is a *fixed red* light, visible between the bearings of N.E. by N. through north to west, elevated 45 feet above the sea, and should be seen 8 miles. Position, as given, lat. $44^{\circ} 29' 40''$ N., long. $34^{\circ} 8' 30''$ E.

10.—ADRIATIC.—Brazza Island.—Speo Point.—A lighthouse is in course of erection on Speo point, east side of Spalatro strait, from which will be exhibited a *fixed white* light. Position, lat. $43^{\circ} 20'$ N., long. $16^{\circ} 24'$ E.

11.—NOVA SCOTIA.—South Coast.—Bon Portage Island.—A light is now exhibited from a lighthouse on the south point of Bon Portage island. The light is a *revolving red* light, showing a *flash every minute*, elevated 46 feet above high water, and should be seen 12 miles. The tower is a square wooden building 28 feet high, and painted white. Position, lat. $43^{\circ} 27' 15''$ N., long. $65^{\circ} 44' 40''$ W.

12.—NOVA SCOTIA.—South-east Coast.—Blind Sisters Shoal.—An iron bell-buoy painted black and surmounted by a cage, has been placed S.E. by S. one-quarter of a mile from the Blind Sisters shoal, western side of the entrance to Halifax harbour. The buoy is moored in 26 fathoms, with Sambro island lighthouse bearing W. by N. $\frac{1}{2}$ N.; Black rock, N. by W. $\frac{1}{2}$ W.; Chebucto head lighthouse, N.N.E. $\frac{1}{2}$ E.

13.—NOVA SCOTIA.—South-east Coast.—Sambro Ledges.—S.W. Breaker.—A black can buoy, with staff and vane, and marked S.W. breaker, has been moored in 12 fathoms water nearly 2 cables south of the S.W. breaker off Sambro island.

14.—CAPE BRETON ISLAND.—Little Bras D'Or Lake.—Barra Strait.—Uniache Point.—A light is now exhibited on Uniache point, north-west point of entrance of Barra strait. The light is a *fixed white* light, 29 feet above high water, and should be seen 10 miles. The tower is a square wooden building, 20 feet high, and painted white. Position, lat. $45^{\circ} 58'$ N., long. $60^{\circ} 48'$ W.

15.—CAPE BRETON ISLAND.—Great Bras D'Or Lake.—M'Kenzie Point.—A light is now exhibited on M'Kenzie point, about 2 miles south-west of port Bevis. The light is a *fixed white* light, 95 feet above high water, and should be seen about 12 miles. The tower is a square wooden building, painted white. Position, lat. $46^{\circ} 7' 15''$ N., long. $60^{\circ} 39'$ W.

16.—UNITED STATES.—*Virginia*.—*Winter-Quarter Shoal*.—A light-vessel has been placed outside Winter-quarter shoal, nearly midway between the entrances of Delaware and Chesapeake bays. The vessel is moored in 11 fathoms, S.E. by E. $\frac{1}{2}$ E. 2 miles from the centre of the shoal, and exhibits a *fixed white* light elevated 15 feet above the sea, and should be seen 11 miles. The vessel has two masts, is schooner-rigged, and painted red, with the words *Winter Quarter* in white on her sides. The approximate position is lat. $37^{\circ} 57' N.$, long. $75^{\circ} 5' 30'' W.$

17.—BAL TIC.—*Stockholm Entrance*.—*Svenska Hogar*.—In accordance with Nautical Notice, No. 138 (August, 1874), the light is now exhibited from a lighthouse on Storö, Svenska Hogar group. The light is a *flashing* light of the second order, showing alternate *red* and *white flashes*, each of *five seconds'* duration, *every half minute*; it is elevated 101 feet above the sea, and should be seen 14 miles. The tower is on the summit of the island, is 60 feet high, built of iron, and painted red. Position, lat. $59^{\circ} 26' 40'' N.$, long. $19^{\circ} 30' 30'' E.$ In thick or foggy weather a bell will be sounded, and when a ship is observed standing into danger, a gun will be fired.

18.—GULF OF BOTHNIA.—*Ratan Harbour*.—In accordance with Nautical Notice, No. 138 (August, 1874), two lights are now exhibited in Ratan harbour north of Umea island, for marking the western shore in making the southern entrance to the port. *Inner Light* is *red*, and is exhibited from the south-east angle of the keeper's dwelling, 80 feet above the sea. *Outer Light* is *white*, and is exhibited from a wooden stand, 18 feet above the sea. The lights are 50 yards from each other, visible between the bearings of N. by E. and W.N.W., and should be seen 5 miles. Position, lat. $63^{\circ} 59' 50'' N.$, long. $20^{\circ} 55' E.$

Note.—The lights kept in line lead clear of the shoal at the southern entrance. In thick or foggy weather a bell will be sounded.

19.—IRISH CHANNEL.—*Isle of Man*.—*Chicken Rock*.—A light is now exhibited from a lighthouse on the Chicken rock, south-westward of the Calf of Man. The light is a *revolving white* light of the first order, showing a *flash every half minute*, elevated 122 feet above high water, and should be seen 16 miles. The lighthouse is built of a light-coloured granite, and is 143 feet high. Position, lat. $54^{\circ} 2' N.$, long. $4^{\circ} 50' 45'' W.$ In thick or foggy weather a bell will be sounded at intervals of *half a minute*.

20.—IRISH CHANNEL.—*Calf of Man*.—The two revolving lights exhibited on this island are discontinued.

21.—ENGLAND.—*East Coast*.—*Outer Gabbard Shoal*.—A *conical* buoy has been substituted for the can buoy on the Outer Gabbard shoal. The buoy is painted *red*, as heretofore.

strait. The patch (*Harrington shoal*) extends about 200 yards in a north and south, and 100 yards in an east and west direction, and has 12 feet water on its shoalest part. From the shoal in 4 fathoms the following bearings were taken, viz. :—West high summit of Turtle island, south; west summit of Albany rock, N.W. $\frac{3}{4}$ W.; and summit of Albany island, N.W., westerly. The shallowest part of the shoal bore N. $\frac{3}{4}$ E., distant 100 yards. These bearings place the shoalest part in lat. $10^{\circ} 47' 40''$ S., long. $142^{\circ} 42' 15''$ E.

9.—BLACK SEA.—*Crimea*.—*South Coast*.—*Yalta Roads*.—A temporary light is now exhibited on Kilisi point. The light is a *fixed red* light, visible between the bearings of N.E. by N. through north to west, elevated 45 feet above the sea, and should be seen 8 miles. Position, as given, lat. $44^{\circ} 29' 40''$ N., long. $84^{\circ} 8' 30''$ E.

10.—ADRIATIC.—*Brazza Island*.—*Speo Point*.—A lighthouse is in course of erection on Speo point, east side of Spalatro strait, from which will be exhibited a *fixed white* light. Position, lat. $43^{\circ} 20'$ N., long. $16^{\circ} 24'$ E.

11.—NOVA SCOTIA.—*South Coast*.—*Bon Portage Island*.—A light is now exhibited from a lighthouse on the south point of Bon Portage island. The light is a *revolving red* light, showing a *flash every minute*, elevated 46 feet above high water, and should be seen 12 miles. The tower is a square wooden building 28 feet high, and painted white. Position, lat. $48^{\circ} 27' 15''$ N., long. $65^{\circ} 44' 40''$ W.

12.—NOVA SCOTIA.—*South-east Coast*.—*Blind Sisters Shoal*.—An iron bell-buoy painted black and surmounted by a cage, has been placed S.E. by S. one-quarter of a mile from the Blind Sisters shoal, western side of the entrance to Halifax harbour. The buoy is moored in 26 fathoms, with Sambro island lighthouse bearing W. by N. $\frac{1}{4}$ N.; Black rock, N. by W. $\frac{1}{2}$ W.; Chebucto head lighthouse, N.N.E. $\frac{1}{4}$ E.

13.—NOVA SCOTIA.—*South-east Coast*.—*Sambro Ledges*.—*S.W. Breaker*.—A black can buoy, with staff and vane, and marked S.W. breaker, has been moored in 12 fathoms water nearly 2 cables south of the S.W. breaker off Sambro island.

14.—CAPE BRETON ISLAND.—*Little Bras D'Or Lake*.—*Barra Strait*.—*Uniache Point*.—A light is now exhibited on Uniache point, north-west point of entrance of Barra strait. The light is a *fixed white* light, 29 feet above high water, and should be seen 10 miles. The tower is a square wooden building, 20 feet high, and painted white. Position, lat. $45^{\circ} 58'$ N., long. $60^{\circ} 48'$ W.

15.—CAPE BRETON ISLAND.—*Great Bras D'Or Lake*.—*M'Kenzie Point*.—A light is now exhibited on M'Kenzie point, about 2 miles south-west of port Bevis. The light is a *fixed white* light, 95 feet above high water, and should be seen about 12 miles. The tower is a square wooden building, painted white. Position, lat. $46^{\circ} 7' 15''$ N., long. $60^{\circ} 39'$ W.

16.—UNITED STATES.—*Virginia*.—*Winter-Quarter Shoal*.—A light-vessel has been placed outside Winter-quarter shoal, nearly midway between the entrances of Delaware and Chesapeake bays. The vessel is moored in 11 fathoms, S.E. by E. $\frac{1}{2}$ E. 2 miles from the centre of the shoal, and exhibits a *fixed white* light elevated 15 feet above the sea, and should be seen 11 miles. The vessel has two masts, is schooner-rigged, and painted red, with the words *Winter Quarter* in white on her sides. The approximate position is lat. $37^{\circ} 57' N.$, long. $75^{\circ} 5' 30'' W.$

17.—BAL TIC.—*Stockholm Entrance*.—*Svenska Hogar*.—In accordance with Nautical Notice, No. 188 (August, 1874), the light is now exhibited from a lighthouse on Storö, Svenska Hogar group. The light is a *flashing* light of the second order, showing alternate *red* and *white flashes*, each of *five seconds'* duration, *every half minute*; it is elevated 101 feet above the sea, and should be seen 14 miles. The tower is on the summit of the island, is 60 feet high, built of iron, and painted red. Position, lat. $59^{\circ} 26' 40'' N.$, long. $19^{\circ} 30' 30'' E.$ In thick or foggy weather a bell will be sounded, and when a ship is observed standing into danger, a gun will be fired.

18.—GULF OF BOTHNIA.—*Ratan Harbour*.—In accordance with Nautical Notice, No. 188 (August, 1874), two lights are now exhibited in Ratan harbour north of Umea island, for marking the western shore in making the southern entrance to the port. *Inner Light* is *red*, and is exhibited from the south-east angle of the keeper's dwelling, 30 feet above the sea. *Outer Light* is *white*, and is exhibited from a wooden stand, 18 feet above the sea. The lights are 50 yards from each other, visible between the bearings of N. by E. and W.N.W., and should be seen 5 miles. Position, lat. $63^{\circ} 59' 50'' N.$, long. $20^{\circ} 55' E.$

Note.—The lights kept in line lead clear of the shoal at the southern entrance. In thick or foggy weather a bell will be sounded.

19.—IRISH CHANNEL.—*Isle of Man*.—*Chicken Rock*.—A light is now exhibited from a lighthouse on the Chicken rock, south-westward of the Calf of Man. The light is a *revolving white* light of the first order, showing a *flash every half minute*, elevated 122 feet above high water, and should be seen 16 miles. The lighthouse is built of a light-coloured granite, and is 143 feet high. Position, lat. $54^{\circ} 2' N.$, long. $4^{\circ} 50' 45'' W.$ In thick or foggy weather a bell will be sounded at intervals of *half a minute*.

20.—IRISH CHANNEL.—*Calf of Man*.—The two revolving lights exhibited on this island are discontinued.

21.—ENGLAND.—*East Coast*.—*Outer Gabbard Shoal*.—A *conical* buoy has been substituted for the can buoy on the Outer Gabbard shoal. The buoy is painted *red*, as heretofore.

22.—RIVER THAMES ENTRANCE.—*Long Sand Head*.—A black bell buoy, surmounted by a Staff and St. Andrew's cross, has been placed in the position formerly occupied by the conical buoy at Long Sand head.

23.—MEDITERRANEAN.—*Bonifacio Strait*.—*Lavezzi Rock*.—The beacon tower, which marked the Lavezzi sunken rock, has been destroyed in a gale. A buoy will be temporarily placed on the rock, but it is uncertain if it will retain its position. Careful bearings of the land by day, and of the lights of Lavezzi and Razzoli by night, will enable the mariner to avoid this danger.

24.—MEDITERRANEAN.—*Italy*.—*Brindisi*.—A light is now exhibited from a light-vessel moored off Brindisi port. The light is a *fixed white* light, 88 feet above the sea, and should be seen 9 miles. The vessel is moored S.E. $\frac{1}{2}$ S., distant 57 yards from the extremity of the mole of Fort di Mare. The temporary light on the extremity of the mole of Fort di Mare has been discontinued.

25.—CAPE BRETON ISLAND.—*Little Bras D'Or Entrance*.—*Anconi Point*.—A light is now exhibited from a lighthouse on High cape, Anconi point, north side of the entrance to Little Bras D'Or. The light is a *fixed red* light, 91 feet above high water, and should be seen 11 miles. The tower is a square wooden building, 20 feet high, and painted white. Position, lat. $46^{\circ} 19' 30''$ N., long. $60^{\circ} 17' 10''$ W.

26.—CAPE BRETON ISLAND.—*Bridgeport*.—*Lingan Head*.—A light is now exhibited from a lighthouse on Lingan head, north side of the entrance to Bridgeport. The light is a *fixed red* light, 50 feet above high water, and should be seen 10 miles. The tower is a square wooden building, 20 feet high, painted white. Position, lat. $46^{\circ} 14' 10''$ N., long. $60^{\circ} 2' 20''$ W.

27.—CAPE BRETON ISLAND.—*Madame Island*.—*Cape Round*.—A light is now exhibited from a lighthouse on Cape Round, east end of Madame island. The light is a *fixed white* light, elevated 92 feet above high water, and should be seen 14 miles. The tower is a square wooden building, 28 feet high, painted white, and is attached to the keeper's dwelling. Position, lat. $45^{\circ} 34' 45''$ N., long. $60^{\circ} 58'$ W.

28.—CAPE BRETON ISLAND.—*Lennox Passage*.—*Ouetique Island*.—A light is now exhibited from a lighthouse on the south point of Ouetique island. The light is a *fixed red* light, 78 feet above high water, and should be seen 9 miles. The tower is a square wooden building, painted white, and attached to the keeper's dwelling. Position, lat. $45^{\circ} 36' 40''$ N., long. $60^{\circ} 57' 15''$ W.

29.—CAPE BRETON ISLAND.—*Creighton Island*.—*Creighton Head*.—A light is now exhibited from a lighthouse on Creighton head, south-west side of Madame island. The light is a *revolving white* light, showing a *flash every forty seconds*, and should be seen 10 miles. The tower is

a square wooden building, 20 feet high, and painted white. Position, lat. 45° 30' 40" N., long. 61° 6' W.

80.—BALTIC SEA.—*Dagö*.—*North Ristna Point*.—A lighthouse has been erected on North Ristna point, west end of Dagö, from which a light will be exhibited next season. The light will be a *fixed red* light, elevated 118 feet above the sea, and should be seen 17 miles. The lighthouse is 98 feet high, built of iron, and painted white. Position, lat. 58° 56' 15" N., long. 22° 4' 15" E.

81.—BALTIC SEA.—*Prussia*.—*Frische Haff*.—*Frauenburg*.—The harbour light at Frauenburg has been changed from a fixed white light to a *fixed red* light, in order to distinguish it from the town lights. Approximate position, lat. 54° 21' 30" N., long. 19° 40' 45" E.

82.—BALTIC SEA.—*Prussia*.—*Rixhöft*.—A second light of the first order is now exhibited from a lighthouse erected at Rixhöft, W.N.W., distant 208 yards from the old lighthouse. The light is a *fixed white* light, elevated 231 feet above the sea, and should be seen 21 miles.

83.—NORTH SEA.—*Elbe River*.—The six light-vessels in the Elbe river will exhibit a white riding light forward, at a height of 6 feet above the rail.

84.—MEDITERRANEAN.—*Greece*.—*Marathonisi*.—The light on Crance island, Marathonisi, has been temporarily discontinued for repairs.

85.—GULF OF ST. LAWRENCE.—*Percé Bay*.—*White Head*.—A light is now exhibited from a lighthouse erected on White head, Percé bay, near Mal bay. The light is a *fixed white* light, elevated 138 feet above high water, and should be seen 13 miles. The tower is a square wooden building, 20 feet high, and painted white. Position, lat. 48° 30' 30" N., long. 64° 18' W.

86.—GULF OF ST. LAWRENCE.—*Magdalen Islands*.—*Grindstone Island*.—A fog-whistle is now established near the lighthouse at Etang du Nord, west side of Grindstone island. In thick or foggy weather, or snowstorms, the whistle will sound *two* blasts of *eight seconds'* duration in *each minute*, with an interval of *twenty-two seconds* between each blast.

87.—AUSTRALIA.—*E. Coast*.—The following dangers have been reported: *Northumberland Islands*.—Captain Hannah, of the schooner *Young Australian*, has reported the existence of a small patch of rock (*Hannah rock*) having 4 fathoms water on it, in the Northumberland group, lying with western point of No. 1 Percy island, bearing N.W. westerly, and north-east islet in line with the peak of south-west island of 4th group. These bearings place the rock in lat. 21° 55' 40" S., long. 150° 29' 30" E.

Night Island.—Mr Sykes, master of the *Hannah Broomfield*, reports the existence of a coral patch (*Sykes rock*) with about 4 feet water on it at low water, and from which the following bearings were taken:—Round rock, N.N.W. $\frac{1}{2}$ W.; highest part of a reef north. These bearings place the rock in lat. 13° 5' 30" S., long. 143° 34' 30" E.

Edwards Rock.—Mr. Sykes describes *Edwards rock*, lying to the southward of Restoration isle, Cape Weymouth, as being awash at low water and extending nearly half a mile east and west, and 100 yards wide. Also, that a detached coral patch having 5 feet water on it at low water, from one-third to half a mile from G reef, with the small westernmost rock of Forbes islets bearing N. by E.

88.—TORRES STRAIT.—*Flinders Passage.*—Mr. Chapman, master of the cutter *Peveril*, reports the existence of a reef in Flinders passage, between Wednesday and Horn islands. The reef (*Chapman reef*) dries at low water, it extends east and west 500 yards, and is 40 yards broad, terminating at each end in sharp points, which are steep to. The following bearings were taken, viz.:—Eastern end—south-east point of Wednesday island, N.E. by E., and north east point of Horn island, S.E. by S. Western end—west point of Wednesday island, N.N.W.; double hill, Horn island, S.S.W. $\frac{3}{4}$ W.

89.—TORRES STRAIT.—*Albany Rock.*—The harbour master at Somerset reports the existence of the following danger, viz.:—A sand-bank, about 200 yards long, east and west, very narrow, and nearly awash at low-water springs, lies N.N.W., half a mile from Albany rock. It is steep to.

40.—UNITED STATES.—*Gulf of Mexico.*—*Timballier Island.*—On the 15th January, 1875, a light will be exhibited from a lighthouse erected near the east end of Timballier island, Louisiana. The light will be a *fixed white* light, varied by a *red flash every minute* of the second order, elevated 110 feet above high water, and should be seen 16 miles. The lighthouse is an iron screw pile building and stands in 7 feet water on the north side of the island. It is painted in alternate black and white bands. The dwelling in the lower part of the tower is white. Approximate position, as given, lat. $29^{\circ} 1' N.$, long. $90^{\circ} 18' W.$

Note.—Timballier island is low and marshy, about 11 miles long, not wooded, and cannot be seen from a greater distance seaward than 6 miles. Vessels passing should attend to the lead and not stand into less than 5 fathoms.

41.—NORWAY.—*West Coast.*—*Trondhjem Approaches.*—*Borö.*—A light would be exhibited from a lighthouse on Börö, at the east end of Hitteren island, entrance of Skioren fiord. The light is a *fixed white* light, visible from S. $\frac{1}{2}$ W. through west and north to E.N.E., showing a sector of *red* light between the bearings S.W. and S.S.W.; it is elevated 52 feet above the sea, and in clear weather should be seen from a distance of 9 miles. The illuminating apparatus is of the fifth order. The lighthouse is a wooden building with a tower, painted white. Approximate position, lat. $63^{\circ} 34' 10'' N.$, long. $9^{\circ} 18' E.$

Note.—The arc of red light covers the Sles Skar.

42.—NORWAY.—*Christiania Fiord*.—*Fulehuk Lighthouse*.—The following alteration has been made in the fog-signal at Fulehuk lighthouse. In thick or foggy weather the bell will be sounded *fifteen times*, lasting *about a minute*, and followed by an interval of *fifteen seconds*.

43.—NORWAY.—*South Coast*.—*Tvesteen Island*.—Two stone pyramidal beacons, 13 feet high, and 28 yards apart, have been erected on Tvesteen, replacing the mark hitherto used. Position, lat. $58^{\circ} 56' 40''$ N., long. $9^{\circ} 56' 40''$ E.

44.—NORTH SEA.—*Jutland*.—*Graa Deep*.—*Esbjerg*.—A *fixed red* light, elevated 17 feet above high water, is exhibited from the head of the north mole at Esbjerg harbour.

45.—NORTH SEA.—*Jutland*.—*Lim-Fiord*.—*Thybo Rön Channel*.—The light-vessel in Thybo Rön channel, the entrance to Lim-fiord, has been moved 1 mile E. $\frac{1}{2}$ S.

46.—BAL TIC.—*Sweden*.—*Kalmar Sund*.—*Demman Shoal*.—A light is now exhibited from the lighthouse on this shoal, and the temporary light is discontinued. The light is a *flashing white* light, showing a flash *every forty seconds*, and is obscured between the bearings of west and W.N.W.; it is elevated 43 feet above the sea, and should be seen 10 miles. The light is exhibited from the 1st March to 15th December, but earlier or later, should the ice be sufficiently open for the passage of vessels. Position, lat. $57^{\circ} 8' 40''$ N., long. $16^{\circ} 40' 50''$ E. In thick or foggy weather, a gong will be sounded.

47.—BAL TIC.—*Sweden*.—*Kalmar Sund*.—*Furö*.—In accordance with Nautical Notice, No. 188 (August, 1874), a *red and white* light is now exhibited from the roof of the Pilots' dwelling to the north-east end of Furö. The light is *red*, between the bearings of W.N.W. through west and south to S.E.; and *white* from S.E. through east and north to W.N.W. It is elevated 47 feet above the sea, and the red light should be seen 5 miles, and the white light 8 miles. Position, lat. $57^{\circ} 17' 17''$ N., long. $16^{\circ} 38' 17''$ E.

Note.—The Pilots' house is painted white, and when a pilot is obtainable a black ball with horizontal white stripe will be hoisted on a mast on the east gable of the house.

CHARTS, &c., Published by the Hydrographic Office, Admiralty, to the end of December, 1874, and Sold by the Agent, J. D. Potter, 81, Poultry, and 11, King Street, Tower Hill.

No.	Scale.		s.	d.
1845	m = 9.0	France :—St. Jean de Luz	...	0 9
E		France, Spain, Mediterranean, &c.	...	0 6
1894		Bass Strait Anchorages :—Franklin		
		Road and Seal Bay, King Island,		
		have been inserted on this Chart.		

OUR OFFICIAL LOG.

KURRACHEE HARBOUR.

Depth of Water on the Bar.—Extract from a letter, dated 26th September, 1873, from the Master Attendant, Kurrachee, to the Commissioner in Sind :—I have the honour to report that the steamer *Atalanta*, 2,300 tons burthen, length from stem to stern 385 feet, drawing 23·8, left the harbour to-day with a full cargo (upwards of 3,000 tons) for Liverpool; there was 27 feet of water on the bar, being 2 feet less than there would be at high water spring tides. 2. The fact of so large a vessel as the *Atalanta* loading here to a draught of 23·8 and crossing the bar with such ease, not even finding it necessary to wait for spring tides, goes far to prove the very great improvement that has been made in the Channel over the bar, and also that vessels of the largest class can now load in this harbour, and enter or leave the port without danger or difficulty.

Time Ball.—Masters of ships are informed that the time will be given from the Master Attendant's Office, Manora, by means of a time ball, on Tuesdays and Fridays, at one o'clock p.m., precisely (Kurrachee mean time). At ten minutes before one, the ball will be raised half-mast high; at five minutes to one, it will be hoisted to the yard-arm, and at one o'clock mean time the ball will drop. In the event of any accident or error, No. 1 Marryatt's Code will be hoisted at the masthead, and will remain flying until the ball is again hoisted as before for giving out the time in a similar manner at two o'clock p.m., mean time. Longitude of Manora Point 66° 58' 15" E., or 4^h 27^m 58^s east of Greenwich mean time.—(Signed)—G. C. PARKER, Acting Master Attendant, Kurrachee, Master Attendant's Office, Manora, 3rd August, 1874.

Entrances and Clearances.—Memo. of the total number and tonnage of sailing vessels and steamers entered and cleared at the Port of Kurrachee during the years 1871, 1872, 1873, and 1874 :—1872-73 : Entered—ships, 1,088 ; tons, 133,066. Cleared—ships, 983 ; tons, 131,098. 1871-72 : Entered—ships, 1,021 ; tons, 129,507. Cleared—ships, 990 ; tons, 627,020. 1873-74 : Entered—ships, 918 ; tons, 161,284. Cleared—ships, 868 ; tons, 157,159. 1872-73 : Entered ships, 1,088 ; tons, 133,066. Cleared—ships, 983 ; tons, 131,098.—(Signed)—GEORGE C. PARKER, Lieut. I.M., Acting Master Attendant.

"Coromandel" (s.s.) at Kurrachee.—The master of this ship writes to the Master Attendant as follows :—"I received your note of yesterday with two copies of the new directions and a small chart of the entrance to Kurrachee, for which I am much obliged, and shall with much pleasure make as widely known as I can, the safety, convenience, and advant-

ages of this fine port, which, I consider the best (that I have been at) in India, in either monsoon. The *Coromandel* is 1,979 gross tonnage, and drew 22 feet 9 inches water, when laden last November, and left when ready without detention or inconvenience. I have again loaded in July to 21 feet 6 inches in S.W. monsoon, and any day during my stay I have been able to take my cargo, water always perfectly smooth. 'I take this opportunity of thanking you for placing my ship at fixed moorings in such a good berth where I have been as quiet and safe as in a dock; also for the attention and precaution used during the late stormy weather by your officers, for the safety and convenience of shipping.'"

UNSEAWORTHY VESSELS.—INSTRUCTIONS TO SURVEYORS.

Appended hereto are copies of two letters from the Board of Trade on the subject of interference with ships (especially those of the small coasting class) on the grounds that they cannot proceed to sea without serious danger to human life. The attention of surveyors is specially directed to the principles set forth in these letters. It is not the desire of the Board of Trade to annoy or interfere with the vessels above referred to, where the conditions of safety mentioned in the accompanying letters are fulfilled. In such cases, reports (Form Surveys 81) leading to the detention of the ships, are not to be sent. Where these conditions are not complied with, the reports of unseaworthiness should be sent as heretofore.—(Signed) T. H. FARRER, Secretary. (Signed) THOMAS GRAY, Assistant Secretary.—*Board of Trade Circular*, December 2, 1874.

Extracts specially referred to:—

"The attention of the Board has been called to the injurious operation which the Acts would have if the same rules concerning seaworthiness were applied to small coasters which are applied to ships making long foreign voyages.

"They are aware that there are many small coasters which would not bear a strict survey, but which (being owned by comparatively poor men, and being habitually navigated by the owners themselves, or by seamen of the locality who are well acquainted with the vessels, with the voyage, and with the risks they run) do, under such circumstances, continue for years to carry on an exceedingly useful trade with little risk, or, at any rate, with far less risk than persons who look only to the condition of the vessels might be led to suppose. To put a stop to trade of this description would be to put an end to the employment and earnings of an industrious and useful class of men, to discourage the supply of seamen, and to deprive the carrying trade of the country of a valuable

form of competition. If this were to be the result of the recent Act, it would probably cause more injury than benefit to the class whom it was intended to protect, and it is scarcely necessary to say that the Board of Trade in administering it are anxious to avoid any such result.

"They are prepared to lay great stress on the point above referred to, and they propose in all cases where circumstances are brought to their notice leading them to the belief that any coasting craft is not entirely seaworthy, to inquire in the first instance by whom she is owned and navigated. If it proves that she is employed on short voyages only, and that she is navigated by the owners, or by men who, being competent and experienced seamen, knowing the craft well and accustomed to sail in her, are willing to continue so to do, the Board of Trade will not, as a general rule, treat her under such circumstances as a vessel seriously endangering human life, although she may not be capable of passing the strict survey which is applicable in other cases."

"Reports have been received recently from the surveyors that ships are unseaworthy, but these reports frequently do not contain sufficient information to enable the department to act with promptitude in deciding whether to detain or not to detain the ship reported; when in future a ship is reported as unseaworthy the surveyor should, in addition to giving her rig, tonnage, and official number, and a general indication of the nature of the defects or sources of danger, also report whether the vessel is a coaster, or an over-sea home-trade ship, or a foreign-going ship, and if a coaster or home-trade ship, the surveyor should also report the nature of her employment, the nature of the cargo she usually carries, and the extent and usual duration of the voyages on which she is usually employed and is about to proceed; whether the vessel goes to sea regularly even in bad weather, or whether she only goes to sea in fair weather; the number of persons who usually proceed to sea in her, and whether the master and crew are well acquainted with the ship, and being well acquainted with her are willing to continue to go to sea in her in her present condition; and, lastly, whether the vessel is provided with a boat rendered efficiently buoyant after the manner of a lifeboat, and sufficient to save the crew in an emergency. Unless these instructions are attended to, much difficulty and inconvenience will arise to all concerned."

PORT OF NAPLES.

The following rules and scale of charges have been agreed upon between the Captain of the Port and the two mooring gangs recognized by him :—

Art. 1.—The two gangs who alternately perform the service of mooring and unmooring in the port of Naples bind themselves to moor and unmoor foreign ships at the rate of charges stated here below (*Arts. 5 and 6*), they providing the requisite barges for carrying out the anchors, boats for making fast hawsers to the buoys, and the necessary labourers.

Art. 2.—The master of the gang on duty is responsible for all damages which may happen during the mooring or unmooring, when it is proved that such damages are attributable to the fault of the gangmen in the execution of their duties.

Art. 3.—If the anchors should get entangled whilst being weighed and the services of a diver be required, the consequent expenses will be exclusive of the mooring charges and paid for separately by the ship.

Art. 4.—The mooring charges stated below (*Arts. 5 and 6*) apply to ordinary weather, the mooring gangs leaving it to the Captain of the Port to decide on the extra charges which may be due to them on account of stormy weather.

Art. 5.—The charges referred to in Article 1 are the following :—*Sailing Vessels.*—From 50 to 150 tons, for mooring and unmooring, lire 60; over 150 tons, 25 centimes per ton in addition to the above charge of lire 60; for simply mooring or unmooring the charge will be reduced by one-half.

Art. 6.—*Steamships.*—For mooring and unmooring steamships, whatever may be their tonnage, the charge is, lire 40—that is to say, lire 25 for mooring, and lire 15 for unmooring.

Art. 7.—The masters of the mooring gangs are bound to exhibit the present agreement, approved by the Captain of the Port, to any master of a vessel who may require their services before they are engaged.

N.B.—Masters of ships are at liberty to moor or unmoor their own ships, and are not obliged to accept the services of the mooring gangs of the ports.—*Naples, October 9, 1874.*

DISTRESS AND PILOTAGE SIGNALS.—GERMANY ADOPTS THE ENGLISH LAW.—The Board of Trade have received, through the Secretary of State for Foreign Affairs, a copy of a dispatch from Her Majesty's Ambassador at Berlin, stating that at a sitting, on the 7th ult., of the Bundes Rath of the German Empire, it was decided to adopt, in their entire and unaltered form, the distress and pilot signals, as set forth in Schedules 1 and 2 of "The Merchant Shipping Acts Amendment Act, 1873."

SOUPS, &c., TO BE CARRIED ON BOARD SHIP.—Under the Merchant Shipping Act, 1867, the following preserved articles are to be carried (under penalties for omission) in addition to the dietary scale agreed to

by the master and crew—viz., soup and bouilli, boiled mutton, essence of meat, dessicated soup, vegetables dried or compressed, potato (if not in scale of provisions), port wine, brandy.—(*Circular*, No. 699, M. 19,402, 1878).—[We call attention to this, as several correspondents who have got into difficulties through omissions, have professed entire ignorance of the legal requirements, and as interminable troubles, delays, and disputes with seamen are likely to result from non-observance of the Act, besides the chance of a Board of Trade prosecution.]

CERTIFICATES OF CHARACTER OF SEAMEN.—Sir,—I am directed by the Board of Trade to state for the information of the Local Marine Board that they have reason to believe that masters not unfrequently give to seamen certificates of discharge, bearing endorsements as to character and ability not supported by the facts or by the entries in the Official Log. The result of this is that men who are incompetent or have misconducted themselves during their term of service are enabled, through the production of these certificates with the letters "V. G." or "G." endorsed upon them, to find further employment without difficulty. Not only do such seamen avoid the consequences of wrong-doing, but injustice is thus done to the good and efficient sailor, and to the masters of the ships in which men holding such false characters afterwards obtain employment. But this is not the whole of the evil, for the present loose and untruthful practice really frustrates the object the Legislature had in view in requiring these certificates of discharge to be issued and certified. The making of a false certificate or report of the service, qualifications, and conduct or character of any seamen is, by "The Merchant Shipping Act, 1854," declared to be a misdemeanour, but no steps have hitherto been taken by this Board to bring home such an offence to a shipmaster. The Board are however of opinion that the evil, if unchecked, is calculated not only to go on increasing, but also to have a most injurious operation upon the discipline of the Merchant Service, and to affect the security of human life at sea. It has occurred to this Board that the Superintendents of Mercantile Marine Offices might perhaps be required, in cases where the character given on the certificate of discharge is obviously and materially at variance with the statements in the Official Log Book, to refuse to sign it and put a "cross" in the place of his signature. This Board would be much obliged if the Local Marine Board would favour them with their opinion upon the question, and with any observations which may occur to them as to the best mode of dealing with the cases. It will obviously be better to do away with the certificate of discharge altogether, rather than to convert it, as is often the case at present, into an authorised official document for furnishing a false statement of character to incompetent, dishonest and dangerous seamen. It may of course be open to this Board to proceed against the

master in each case under the 176th Section of the Merchant Shipping Act, 1854; but whether this is so or not they would rather, by co-operation with the Local Marine Boards, hit upon some plan which will render unnecessary the delays and vexations of such a course.—I am, &c.—(Signed)—THOMAS GRAY.—Circular, dated 18th Dec., 1874.

GENERAL.

AT SEA—VERY MUCH.—Our contemporary *The Engineer*, in a leader in its last number on "The Bessemer Channel Steamer" announces that "it has been shown that the taffrail of an American liner often falls through a vertical space of 80ft. in about one second when running in a heavy sea." If not asking too much of our contemporary, we should like to know how, when, and where this "has been shown." We ourselves never heard of the deck of a vessel falling so rapidly that the men standing on it were left behind; but if our contemporary be correct this must be a common although not ordinarily known occurrence. Ordinary individuals, as well as all inanimate bodies with which we are acquainted, only manage to get through a space of a fraction over 16ft. during their first second when falling freely under the action of gravity, and if, therefore, an incautious sailor or passenger happened to be standing near the "taffrail of an American liner" when that vessel was about to perform the remarkable gymnastic feat which our contemporary records, he would at the end of a second find himself situated 14ft. above the deck surrounded by such loose articles as the deck near him might have carried before its descent! Our contemporary adds: "The effect of such a drop, as this is beyond all question more severe than anything rolling produces." Quite so!—*Engineering*.

TRANSFER OF SHIPS TO GERMAN FLAG.—The *Ostsee Zeitung*, of Stetting, reports that the barque *Humber*, formerly an English ship, but recently transferred to the German flag, has been condemned at Dantzic as unseaworthy. The same paper states that cases in which ships declared unseaworthy in England have passed under the German flag are very frequent. In reference to this matter the German Lloyd has issued a circular to their agents, which we translate as follows:—"Berlin, October.—The following notice has appeared in the newspapers—'In England vessels now undergo a more rigorous examination than formerly in reference to their seaworthiness, and several ships have in consequence been condemned as unseaworthy. In most of these cases the owners have sold these ships to foreigners, which can only be done *pro forma* as a rule. These

vessels, therefore, continue their voyages unhindered under a foreign flag. In Swinemunde also vessels condemned in England have thus been discovered under the German flag. In view, therefore, of ships bought from English owners being placed on the register, the authorities on this side should exercise a stricter control, in order that scandal may not accrue to the German flag through life and property being lost in these ships.' This notice will not have escaped your attention, although its purport must be accepted with the greatest caution ; for the difficulty of manning a ship condemned as unseaworthy, or of selling it as a seaworthy craft, is so great as to cast a by no means unjustifiable doubt on the above-quoted notice. Be this, however, as it may, we hold ourselves bound to earnestly recommend you to exercise extreme caution in admitting old English vessels, and we beg of you continually to send us immediate information when such vessels are submitted to you for classification, and not to determine their class until you shall have received from us our approval, in reply to your report. At the same time we beg of you to report to us whether any purchases of old English ships have lately been made by owners in your district, or whether any such have been placed under the German flag."

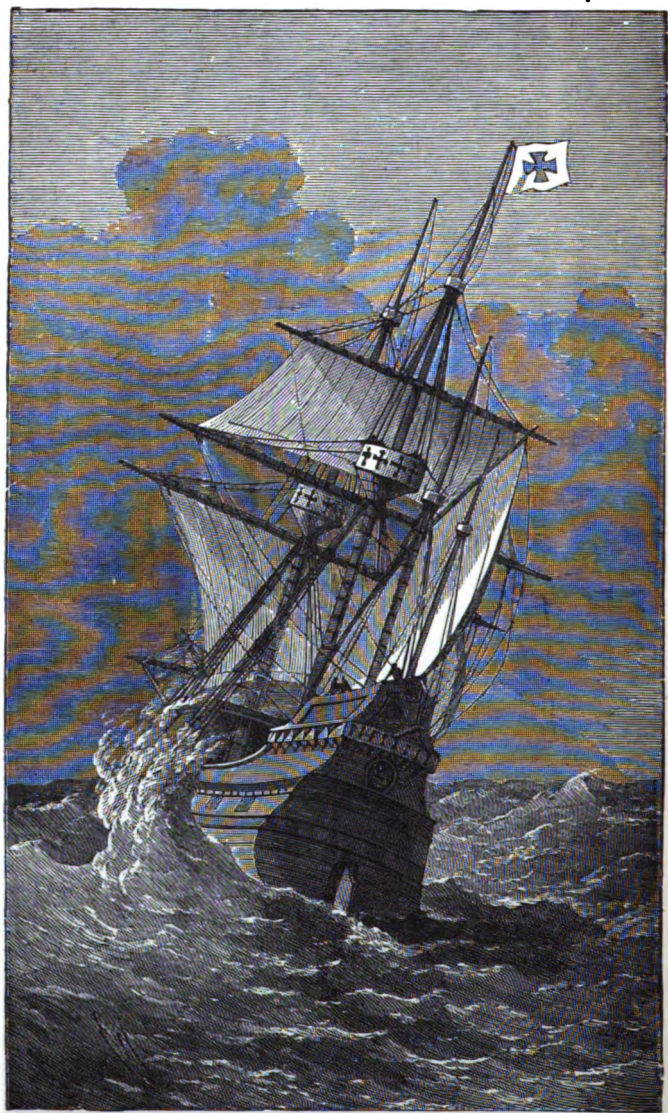
HARBOUR MASTER AT HOLYHEAD.—The *Naval and Military Gazette* has the following on this subject :—" Rumour is silent as to the successor to the late Admiral Schomberg. The appointment is a good one, and in the gift of the Board of Trade ; but the President will consult the Admiralty before they select an officer to fill the post. Here we have an opportunity to provide for *one* of the senior officers on the active list, in one of the snugest berths that can be imagined ; and promotion of juniors will follow. Every little helps." This exactly shows that "the service " looks upon Board of Trade appointments as a matter of right. We are very glad that the President of the Board of Trade has not taken that view. It is not at all clear to us why naval officers on the active list should be deemed to be proper persons for mercantile work, and, above all, why those naval officers should be appointed to Board of Trade vacancies over the heads of deserving officers, naval and otherwise, already in the service of the Board of Trade. We are always glad when the filling up of a vacancy causes promotion, and we agree with the *Naval and Military Gazette* that every little helps in this direction. Our only difference is that we think vacancies in the Board of Trade should lead to promotions within that staff, whilst our contemporary thinks that vacancies in that staff should lead to promotions in the active list of naval captains. We never yet heard that the Board of Trade cannot make promotions in its own staff unless the President consults the Admiralty ; on the contrary, we cannot see why the President of the Board of Trade should not be able to do his own work and of himself.

That the right honourable gentleman can act independently of the Admiralty is clear, he having appointed that clever and courteous officer, Captain Mackenzie, R.N., who was the chief emigration officer at Liverpool, to be harbour-master at Holyhead, thereby rendering it possible to make promotions within the Board of Trade service. We are not of those who look with satisfaction on the appointment of no one but naval officers to survey coasting ships in the Merchant Service. Captain Mackenzie, as a Board of Trade officer in Liverpool, has won golden opinions from everyone—from his colleagues as well as from the public—and he receives our sincere congratulations on the honour now conferred on him by Sir Charles Adderley, whose action in this matter has, we hear, quite revived the hopes of officers serving the Board of Trade at the outports. While upon the subject of Holyhead, we regret to have to record the death, on the 29th November last, at the advanced age of seventy-two, of Mr. George Clarisse Dobson, resident engineer to the harbour works from their commencement to their completion in 1878. Previously to his appointment to this post by the Lords Commissioners of the Admiralty, in 1846, he had been employed upon the Plymouth Breakwater, and other engineering enterprises. The long usefulness of lives like Mr. Dobson's, consecrated entirely to the carrying out of lengthy constructions, is often in danger of being overlooked in comparison with more varied or less unobtrusive careers. But many are still alive who will remember his undeviating integrity of purpose, and can recall the pride and courtesy with which, in the earlier and more active days of the works, especially, he explained and exhibited their details to visitors. Mr. Dobson was a member of the Institute of Civil Engineers, in whose "Proceedings" a memoir of his life will, doubtless, appear.

DESERTERS BEWARE.—In November last, a large ship named the *Sarah* and *Emma* sailed from Cardiff, and, what is rather unusual at that port now, four seamen neglected to proceed, after signing articles. In the ordinary way of business, at the Mercantile Marine Office, information was transmitted to the neighbouring ports. Two were detected at Bristol, and one at Newport, by the officers there. The fourth was found at Porthcawl by one of the Cardiff officers, who was conveying a crew on board another vessel then lying at that creek. Rather singularly the whole four were arrested within a few hours of each other. The vessel had sailed, and the owners wisely determined to prosecute them before the Cardiff stipendiary, who committed them all to prison for the usual term. Is the complete network of arrangement for catching crimps and deserters in the Bristol Channel a "nautical affair," according to Mr. Brassey's definition, which only a sailor can arrange, or is it not a piece of official administration that has nothing to do with previous sea service. Whatever it may be it has not been organized by a sailor.

BLOOD-MONEY AT SAN FRANCISCO.—We are sorry once more to have to refer to this subject, which we hoped and thought that the exertions of our Consul and British shipmasters at San Francisco, aided by the co-operation of the United States' Commissioner, had made one of the things of the past. Unfortunately it has turned up again, and much to the discredit of the shipmasters in question, who, it seems, only waited an opportunity to be as bad as the crimps. Before, the scarcity of seamen enabled the crimps to put a price on the head of each seaman supplied, but lately, owing to the farmers holding back their cargoes of wheat, ships have to wait for their loads, and the supply of seamen far exceeds the demand. The desire of turning the tables on the crimps added to the wish to put some money in their pockets, has, it appears, been too much for the honesty of the masters, and they now demand a *bonus* from the crimps as a *douceur* for patronising their stores of sailors. Whether it be the crimp who pays the master, or the master the crimp, the result must be equally disastrous to the seaman, or the shipowner, out of whose pockets, in some way, the "*bonus*" is sure to come. Our Consul, as usual, has not been long in finding out the evil or in trying to remedy it, and has issued the following notice to masters of British ships, pointing out to them the illegality of their conduct, and appealing generously to their sense of right, an appeal which we, with him, do not doubt will be successful:—"To Masters of British Ships.—It has come to my knowledge that several masters of British ships have of late been demanding, and receiving from sailor boarding-house masters, a bonus of from five to ten dollars for each seaman supplied, and as it is an unquestionable fact and self-evident that this bonus is charged to the seamen, the receipt of it is directly contrary to the 148th Section of the Merchant Shipping Act, 1864, which sets forth that 'If any person demands or receives, either directly or indirectly, from any seaman or apprentice, or from any person seeking employment as a seaman or apprentice, or from any person on his behalf, any remuneration whatever, other than the fees hereby authorised for providing him with employment, he shall for every such offence incur a penalty not exceeding five pounds.' This action on the part of shipmasters is, I am well satisfied, also contrary to the interests of owners having ships trading to this port; therefore, alike in the protection of those interests, and in the upholding of the law for the protection of seamen, I shall feel it my duty hereafter to endeavour to procure evidence of any such act for transmission to the Committee of Privy Council for Trade, London. I believe it to be only necessary to call the attention of shipmasters to the illegality of the proceeding and the ultimate loss to shipowners thereby, to ensure a discontinuance of it.

—WM. L. BOONEY, Consul, British Consulate, San Francisco, Oct. 9, 1874."



THE SHIP OF VASCO DA GAMA.

THE NAUTICAL MAGAZINE.

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FEBRUARY, 1875.

SEAL BUTCHERIES.

IN the month of February, 1873, there appeared a letter in the *Times*, written by Mr. Frank Buckland, calling attention to the ruthless and unnecessarily cruel manner in which the seal fisheries were at present carried on, and pointing out that, unless some steps were taken to prevent wanton and indiscriminate slaughter, there would soon be few, if any, seals left, and that a valuable commercial industry would be seriously affected, if not destroyed. Mr. Buckland stated that, while engaged, two years previously, in examining the salmon fisheries of Scotland, he had had the pleasure of meeting at Peterhead Captain David Gray, commanding officer of the screw steamer *Eclipse*, one of the principal vessels which sail annually from Scotland in pursuit of whales and seals, and that Captain Gray had informed him that the seals lie like flocks of sheep upon the ice, but that every year they are observedly getting less and less in number. These observations referred only to the seal fishery prosecuted almost entirely by British and Norwegian vessels in the neighbourhood of the island of Jan Mayen, a volcanic mountain rising 2,000 feet above the level of the sea, and they do not apply to either the seal fishery, carried on by the Russians and Americans among the Prybilov Islands, and other islands adjacent to the peninsula of Kamtchatka, nor to that which is or was prosecuted on the rocky shores of New Zealand, in the Crosets, and around Kerguelen Island. They do not apply to the former, because the Russians have wisely adopted the plan of killing only a limited number of such males as have attained their full growth, a plan said to be peculiarly applicable to the fur seal, the *Arctocephalus ursinus*, as its habits render

the system of husbanding the stock as easy and certain as that of destroying it. They also do not apply to the fishery on the shores of New Zealand, as, owing to the reckless system of slaughter pursued there during the past thirty years, the seals are already more or less exterminated in that part, and the seal fishery there may be considered as a thing of the past. But, to return to Mr. Buckland's letter, he gives us the following account, furnished by Captain Gray, of the method in which the seal hunting is carried on, and, as Captain Gray has probably taken part in the business for several years, the account is, no doubt, perfectly accurate and trustworthy:—"On the seals being reached," he writes, "the men are sent over the ice, the harpooners armed with rifles, the other men with seal-clubs, knife and steel; also a rope to drag the skins to the ship. And now a work of brutal murder and cruelty goes on enough to make the hardest-hearted turn away with loathing and disgust. The harpooner chooses a place where a number of young seals are lying, knowing well that the mothers will soon make their appearance to see if the young are safe, and are then shot without mercy. This sort of work goes on for a few days, until tens of thousands of young seals are left motherless to die of starvation, not so much from the number of old ones killed (although too many of them are slain at this season, 40,000 being killed last year in March) as from those wounded and scared away. In a short time the old ones become shy, and will not come near where the men are standing, but keep at a respectful distance. It is horrible to see the young ones trying to suck the carcasses of their mothers, their eyes starting out of the sockets, looking the very picture of famine," &c., &c. Now, the main point in this account, and what is most deserving of attention, would appear to be the reckless waste and unnecessary cruelty which takes place, owing to the killing of the seals commencing before the young ones are able to take care of themselves. This would seem to be the more wanton and foolish, as it is stated that the young seals are at that age only worth about one shilling per skin, and are said to contain little or no oil. The fishery usually commences about the 20th of March, but sometimes even earlier than this, and the young ones are, on that date, generally about a day or two old. Were they left unmolested until the 5th of the following month, so rapid is their growth that Mr. Buckland states their skins would then be worth three or four shillings a-piece, and 100 seals would yield oil to the value of from £35 to £40. Thus it becomes evident that, by commencing the annual *battue* some ten or twelve days later than has hitherto been the custom, not only would a great amount of unnecessary cruelty be avoided, but, what is of more importance from a business point of view, the profits of the trade would also be considerably increased. The young seals would not be left to die in thousands from starvation owing to their mothers

being killed before the pups are old enough to provide for themselves, and such of the young seals as were killed and taken would be worth ten or twelve times as much as they would have been worth if killed, as is now the custom, on or about the 25th March. But the most important point in the whole question is that if this reckless waste and indiscriminate slaughter without regard to the preservation of the stock is allowed to continue, the days of the trade are numbered, as, in a very few years, there will be neither seals nor seal fisheries, at any rate so far as the neighbourhood of Jan Mayen is concerned. And this is the fishery in which we are chiefly interested, as it is the only one, so far as we are aware, in the prosecution of which British vessels take a prominent part.

It was stated some months ago, in a continental paper, that the number of vessels proceeding from the various countries of Europe to the Jan Mayen seal fishery was as follows :—from Norway, twenty-seven vessels, of which twelve are steamers ; from Great Britain, twenty steamers, and a few sailing vessels ; from Sweden, two vessels ; from Germany, five steamers ; and one sailing vessel from Holland—thus making a total of about sixty vessels that are engaged every year in this trade, which must therefore afford employment to a very considerable number of men, more especially as Norway alone is reported to have 2,000 men engaged on board the vessels sailing from that country. With reference, however, to the number of ships stated in the above account as proceeding from Great Britain, we must observe that it does not agree with reports which we have obtained from other sources, and which we have every reason for supposing to be perfectly trustworthy and accurate. From these reports we learn that the number of vessels sailing from the various ports in the United Kingdom are as follows :—from Dundee, eight vessels ; from Peterhead, two ; from Kirkcaldy, one ; and from London, one. This would, therefore, only give a total of twelve ships sailing from this country, instead of twenty steamers, and a few sailing vessels, as stated in the continental newspaper referred to above. A trade, however, in which even as many as twelve vessels are employed, is one of considerable importance, and is sufficiently large to claim our careful attention, when, as now is the case with reference to the seal fishery, we learn that it is in imminent danger of being destroyed.

Mr. Buckland, in his letter, to which we referred at the commencement of this paper, stated that he and Captain Gray had submitted the case of the threatened destruction of the fishery to the authorities of the Board of Trade, with the view of obtaining an international treaty on the subject. He further states that they had been advised that the general view of the seal hunters should at once be obtained, and that at a meeting of the managing owners of the seal and whaling ships belonging to the port of

Peterhead, which had lately been held, it was unanimously resolved, "That it is expedient that the seal fishery should be protected by a close time, and that it should be prevented by legislative enactment, and if necessary by international agreement, from being prosecuted at a date earlier than the 6th of April in each year." He adds that a committee was formed to communicate these resolutions to the owners of seal and whale vessels belonging to other ports, and it was determined that a memorial should be sent to the Board of Trade.

These observations by Mr. Buckland are, we find, somewhat misleading, as, on enquiry, we are definitely informed that neither that gentleman nor Captain Gray ever submitted the case to the Board of Trade, nor was any memorial received from the shipowners of Peterhead. A memorial was, we believe, prepared some time afterwards at that port, but as some of the shipowners of the other principal port of the seal trade—viz., Dundee, omitted, or declined to sign it for some reason best known to themselves, the document appears to have died a natural death at the place where it was originated.

It was not until the month of September last, when rather more than a year and a half had elapsed since the appearing of Mr. Buckland's letter in the *Times*, that a despatch was received at the Foreign Office from Her Majesty's Minister at Stockholm, in which it was suggested that some international arrangement should be made to remedy the abuses prevalent in the seal fishery, and attention was called to a letter which had appeared in a Swedish newspaper on the subject. In that letter it was stated that since the month of May last, when the Norwegian seal fishers began to return, negotiations had been going on, though up to that time without success, between the different shipowners, with a view to some understanding being arrived at as to postponing the opening of the fishery for one month later than has hitherto been the usual practice. The masters of the vessels, it said, gave heart-rending descriptions of the manner in which the fishery had been conducted during their recent expedition, owing to its having been commenced too soon. Thousands of pregnant female seals were seen swimming about, preparatory to giving birth to their young on the ice over the shoals frequented by the shrimps, on which the seals principally subsist, but the vessels were lying in wait for them, and such a destruction ensued that, after the lapse of three days, the fishery was utterly destroyed, while thousands of young seals were to be heard crying piteously after their slaughtered mothers. The letter further stated that it had been suggested that a committee of Norwegian shipowners should be instituted, who should prepare and lay before each owner for signature a document, by which he should solemnly pledge himself not to go, or allow his vessel to go, to sea until a fixed date, which would be different for steamers and sailing vessels; but that as no agreement

could, however, be come to on that point, the diplomatists of the country had been urged by the papers to take the initiative in the matter.

The despatch received at the Foreign Office from Her Majesty's Minister at Stockholm, was forwarded at once, we are informed, to the Board of Trade, and that Department forthwith took steps to investigate the matter, in order that something might be done to prevent the threatened destruction of the fishery. In the first instance, it was found to be necessary to ascertain the views of the traders of this country who are interested in the seal fishery, and to learn from them whether they were prepared to impose any, and, if so, what, restrictions upon the manner in which it was conducted. After some preliminary correspondence upon the subject, it was decided that a conference should be held at Dundee, on the 2nd of December, at which the owners and masters of the vessels engaged in the trade should discuss the matter before an officer of the Board of Trade who would be sent down from London for that purpose. That Department accordingly instructed Mr. Frederick Jennings, one of their officers, to proceed to Dundee and conduct the enquiry.

From the report of the meeting, given in the *Dundee Advertiser* of the 3rd of December, we find that there were present on that occasion, on behalf of the Dundee companies, Mr. David Bruce, manager of the Dundee Seal and Whale Fishing Company; Mr. George Welch, manager of the Tay Whale Fishing; and Mr. James Miller, joint-manager of the New Arctic Company, besides many other owners and masters; the Peterhead traders were represented by Mr. Alexander Robertson and Captain David Gray, of the *Eclipse*, s.s., the latter being the gentleman referred to at the commencement of this paper as having furnished Mr. Buckland with much interesting information on this subject. The proceedings of the meeting were commenced by Mr. Jennings reading to those present a letter, which had been previously addressed to the principal companies interested in the fishery, by the Board of Trade, and which set forth the object which that Department had in view in bringing about a conference of the traders and shipowners connected with this business. Amongst the gentlemen who afterwards addressed the meeting, Captain J. B. Walker remarked that the fishery was at present conducted in the same manner as it had been for years, but that the vessels engaged in the trade were now more powerful, and could more easily get among the fish. He approved of having a close time for the fishery, both on the grounds of humanity and because the young seals would be better developed. Captain Soutar also thought that the killing of the seals ought not to commence till the 5th of April, as the young ones would then be of more value, and stated that last year the sealing was actually finished just about the time when it ought to have begun. The question of whether there should not also be a fixed date for ending the fishery was also raised, and after a long discussion, in which Captain

Adams, Mr. Bruce, and Captain Gray took part, the following resolutions were finally agreed upon, and carried :—

- “ 1.—That, in the opinion of those present, it is necessary for the preservation of the seal and the permanent benefit of those engaged in the fishing, that a close time should be established.”
- “ 2.—That the fishing should not commence till the 5th of April, and should not be prolonged beyond the 15th of May, the close time extending between said dates.”
- “ 3.—That the close time should be enforced by a treaty or agreement amongst the Governments of the countries to which vessels engaged in the fishing belong, and that other Governments should be invited to become parties to such treaty or agreement in the event of vessels belonging to their subjects afterwards engaging in the trade.”
- “ 4.—That under such treaty or agreement, penalties of considerable amount should be prescribed for infraction of the rules established by it, and that half of such penalties, or such portion of them as may be deemed expedient, be payable to the crews or parties who may give such information as may lead to convictions against vessels or parties transgressing.”

These resolutions were afterwards laid before the Board of Trade by Mr. Jennings. And here we must remark that a rather singular coincidence happened in connection with this conference, as on the very day on which it was sitting at Dundee—viz., the 2nd of December, a despatch was received by the Board of Trade from the Swedish Government, expressing its desire for the co-operation of this country in an international commission with a view to concerting measures for the preservation of the seal tribe, especially on the island of Jan Mayen. In answer to this despatch, the Board of Trade have, we understand, forwarded, through the Foreign Office, a copy of the resolutions passed at the meeting at Dundee for the information of the Swedish Government, and have submitted for its consideration whether it would not be advisable, if it approves of those resolutions, for the Governments of both countries to pass a law binding on their own subjects, adding that if the fishing vessels of other countries should hereafter join in the trade it would, of course, be necessary to invite the Governments of those countries to pass similar laws.

It will thus be seen, that, as the matter stands at present, there is a strong probability that before many months have elapsed some legislative measure will be passed, both in this country and that of Sweden, providing a close time for the protection of the fishery. But a difficulty may afterwards arise with reference to vessels sailing under other flags, as it is quite open to any enterprising but dishonourable trader either of this country or of Sweden, to have his vessel registered in a foreign country, and so place himself in a position in which he will be able to send his vessel to


Jan Mayen and get the best of the fishing before the crews of the other vessels can commence. We must, however, confess that we doubt whether the crew of any single vessel would be found courageous enough to do this, and for the simple reason that there would probably be the crews of some fifty Swedish and British vessels looking on, who, in the absence of policemen in those cold localities, might, and probably would, make it unpleasant for the offending crew. We may, then, rest assured that so soon as a law has been passed by the two countries principally interested in the fishery, that law will practically become the regulation governing the method in which the sealing is carried on, whether the vessels engaged in the trade belong to those countries or not, more especially when we remember that other nations will, if necessary, be invited to pass similar laws.

There is but one other point to be mentioned, and that is, that it may, before many years have elapsed, be found necessary to institute a year of grace, say every third or fourth year, during which no seal fishing shall take place. But it will be advisable to postpone such an arrangement as long as possible, inasmuch as the crews shipped on board vessels engaged in this trade are special crews, and there might be some difficulty in getting them together again after they had once been discharged. No doubt this difficulty could be surmounted by offering each seaman a small retaining fee, payable to him on his re-engagement after the year of grace, and this would not add very materially to the total expense of the voyage.

One word of comfort, in conclusion, to such of our lady readers who have been shocked by the accounts of the cruel manner in which this seal fishery at Jan Mayen is carried on. They will be pleased to learn that their "dear" seal-skin jackets do not come from that part, but that they are the skins of a different kind of seal, which is killed by the Americans and Russians near Aliaska and the Kurile Islands, and in the vicinity of Newfoundland. Whether the Americans and Russians kill the seals in a more kindly manner than the Scotch and Norwegians we are not prepared to say, but we hope they do.

A MIDSUMMER DANCE.

BY PERCY HAMILTON.

HE lads and the lasses from homestead and chalet,
 To a chesnut-girt meadow have wended their way;
 They have come from the lake-side, the alp, and the
 valley,
 To dance through the hours of a midsummer day.

The fiddlers play briskly, and briskly the dancers
 Keep time to the music with light twinkling feet ;
 And words whispered softly bring still softer answers,
 As hands are pressed gently, and eyes shyly meet.

Round the thyme-scented meadow the elders are sitting,
 Whilst the little folk joyously play at their knees,
 They gossip and laugh as the dancers keep flitting
 In and out of the shade of the old chesnut trees.

Apart from the gay groups, deserted and lonely,
 An old woman sits and looks on the gay scene ;
 She watches the dancers, but with her eyes only,
 Her thoughts are far off from the dance on the green.

She thinks of the days when her feet were the lightest
 That brushed off the dew from the flower-spangled grass ;
 That her lips were the ripest, her eyes were the brightest,
 There were many to tell her, as well as her glass !

She thinks of the young men who fought for her favour,
 Who ran at her bidding, and came at her call :
 She gave them a word, or a smile, and they gave her
 Their heart's honest love, but she laughed at them all.

She thinks of the one, whom at last she had chosen,
 The truest and noblest of all she had known ;
 Who had melted her heart, so cold and so frozen,
 And warmed it with love, till it glowed like his own.

And where were the maidens who danced at her wedding ?
 The young men who trolled out their merriest staves ?
 All gone like the rest !—and their children are treading
 The sweet summer flowers, that bloom over their graves.

Where too were her children (the crown of her losses),
Who one by one lovingly hung at her breast,
Then faded away ? Now she thinks of the crosses
That mark in God's acre the place where they rest.

Down her care-furrowed cheeks the hot tears slowly trickle,
As she thinks of her old age without any prop,
Death has had a rich harvest ! she wishes his sickle
Had cut her down too, with the rest of the crop.

Worn out with her walk, and her thoughts so heartrending,
Her hands drop down listlessly into her lap ;
With eyes slowly closing and head forward bending,
The old woman falls gently into a nap.

But, oh ! what a change has come over her features,
A smile round her lips is beginning to play ;
From the saddest she turns to the happiest of creatures,
And the sunbeams have kissed all the tear-drops away.

She dreams by her loved ones that she is surrounded,
And tenderly whispers each well-beloved name ;
Her voice seems as if from a distance it sounded,
'Tis the old woman's voice, and yet 'tis not the same.

The dancers give in, though they're loth to surrender,
For stars in the sky are beginning to peep,
The laughter is loud, and the partings are tender,
But still the old woman smiles on in her sleep.

"So old and so weary ! we must not forsake her,
Let us see her home safely," a kind maiden said ;
"How happy she looks, 'tis a shame to awake her."
The old woman has gone to her home,—she is dead.

Death has dealt with her kindly, whilst peacefully sleeping
She has passed from this sorrowful world to that place,
Where the dwellers know nothing of parting and weeping ;
Is it strange then she wears a sweet smile on her face ?

OUR COLONIES.—VI.

THEIR COAL DEPOSITS.



NE of the most important and useful of the natural productions of our Colonial possessions is certainly that of coal, especially in its future relations to their material progress, and the aid they can thus afford to the parent State. As yet the vast deposits of coal in our various Colonies have been scarcely developed, for only a few localities are at all extensively worked.

A country without coal is deprived of, perhaps, the most powerful agent of civilization. In these days of steam-engines, steamboats, and railways, on the use of which we are so dependent for commercial intercourse, and the provision of innumerable wants, coal, the prime mover of all this vast machinery, is an absolute necessity, and if it be not produced within our country, we must draw our supplies, at great cost, from other places.

In a paper read by the late Mr. Eddy, before the Royal Colonial Institute, in 1872, "On the Natural Distribution of Coal throughout the British Empire," after asserting that coal is not only the most important of all products in ministering to the arts of peace, and supplying the sinews of war, is the one great agent for facilitating intercourse between distant lands, and for supplying the physical bonds which unite our Colonies to each other and their parent State, he goes on to show that coal-fields situated near the seaboard, and, therefore, available for marine and naval purposes, exist in abundance in our principal groups of Colonies, and form a most peculiar and distinctive feature of the various members of the British Empire.

The export of British coal has gone on increasing year by year. In 1873, over 12,617,000 tons were shipped, and the Board of Trade returns show that in 1874, the export was 13,909,000 tons, besides 2,900,000 tons for the use of steamers engaged in the foreign trade. How highly desirable, therefore, must it be to lessen this great drain upon our home supplies, by working and utilising wherever possible, the large existing coal-fields in our Colonies. The bulk of our extensive shipments of coal go, however, to foreign countries, and feed rival factories.

It is a fortunate circumstance that, with few exceptions, wherever important British Colonies have been founded, there has also been found a local supply of coal; thus the colonists of that race, which, above all others, has attained great national prosperity by means of its vast mineral wealth, find in their new countries the same agents whereby to build up a like greatness.

Starting from England, the first considerable supply of coal we come to is on the very nearest part of the coast of North America, and this is on British soil. The island promontory of Cape Breton, stretching out towards us into the Atlantic Ocean, teems with bituminous coal of excellent quality; seam above seam crops out on the face of the cliffs to an aggregate depth of about 150 feet, several of the seams being from 6 to 8 feet thick, one 39 feet thick, and another 22 feet. A little further to the west, highly bituminous coal is found at Pictou, and at the head of the Bay of Fundy, stretching across the narrow neck of land to the Gulf of St. Lawrence. The supply of this coal-field is, without doubt, enormous; its importance cannot be exaggerated, and its advantages are threefold. It opens out on a bold coast, abounding in harbours, on the very nearest portion of the American seaboard. It is close to our naval arsenal of Halifax, "the western sentinel of the Atlantic," and it renders easy of achievement and of maintenance the great intercolonial railway, which is destined to bind together, in material intercourse, the several States of the Dominion already associated in a political union.

It is probable that *Nova Scotia*, in proportion to its extent, stands unrivalled in the productive capabilities of its coal-fields. In 1851, only 115,000 chaldrons of coal were raised in the province; in 1872, the quantity raised was 881,000 tons, and the average number of persons employed in the collieries was 3,522. *Nova Scotia* coal now sells at remunerative prices in several markets hitherto altogether supplied from Great Britain.

As regards the steam coal, in a few cases, determinations of sulphur have been made; but from this impurity the greater part of the coals now worked in the Pictou region is quite free. One point of difference between the Welsh steam coal and the Pictou coal is this: whereas the former gives a larger amount per ton of steam evaporating power, it also gives a larger amount of sulphur, causing a clinker, which adheres and eats the bars of the furnace; whereas the latter, with a less amount of steam-producing power, contains hardly any sulphur, but makes a large amount of ash. For fuller information on this branch of the subject, a "Report on the Coals of Pictou County," by Mr. Edward Huntley, F.G.S., may be consulted.

Most of the albertite and other coal of *New Brunswick* is consumed in the province, and only a few thousand tons are exported annually.

Coal is also supposed, with good reason, to exist on the western shore of *Prince Edward Island*.

The carboniferous system appears on the opposite coast of *Newfoundland*. The Governor of that Colony, in a recent official report to the Colonial Office, states the fact that coal exists over a large area on the western side of the island, has been ascertained beyond a doubt, and this must be

reckoned as a valuable discovery. In 1868, Professor Bell, of Canada, visited the neighbourhood of St. George's Bay, and found a fine workable seam of coal.

Mr. Murray, the island geologist, calculates that the area of this solitary seam, even supposing there were no others to be found, is 38 square miles, and allowing a thickness of 3 feet, there would be 54,720,000 chaldrons of coal. It is not to be supposed that the whole of this is accessible, but there can be no doubt that most of it is within working depth. The proximity of this splendid coal-field to Canada, and the facilities it presents for coaling passing steamers, need not be dwelt on.

Governor Hill adds :—" That during the past few years, proofs as to the existence of valuable mineral deposits have multiplied so rapidly, that there are not unreasonable grounds on which to base an affirmation that the island is destined to become one of the world's great mining regions."

From the reports of Professor Dawson, and other eminent geologists, it is evident that we have such a supply of coal in Nova Scotia as must give us the rule of the western side of the Atlantic. Holding the eastern and the western sides, then, we may consider the Atlantic safe. Going into the interior, we next come to the coal-fields in the Rocky Mountains. These are, however, but little explored as yet. Crossing the mountains again, we arrive at *Vancouver Island*. Here, too, we have coal-fields of the richest quality.

Coal-seams are exposed in more than a dozen different places on the east coast of Vancouver. About five miles from the shore, on the south-west side of Comox Harbour, there is an almost perpendicular cliff, where there are four coal seams, 4 feet 6 inches, 5 feet 4 inches, and 10 feet in depth. Coal-seams, said to resemble these, occur at no very great distance in a north-west direction; still further north-west, 16 miles from Cornox Harbour, and close upon the coast, there is a 4 feet coal-seam. Coal-seams are found in a number of other places, both south-east and south-west of Comox Harbour.

The general trough seems to be divided into two distinct basins : the Comox Basin between Cape Mudge and North-West Bay, 64 miles in length, with an average breadth of 7 miles, exclusive of what may be under waters. The productive area can be safely considered, at least, 800 square miles.

Following the rules applied to coal-fields in South Wales, the Union Mine at Comox alone would yield 16,000,000 tons per square mile, and the Baynes Sound Mine 7,680,000 tons. The other mines of this district have not been sufficiently examined to make any calculations of the yield.

The second, or Nanaimo Basin, is about 16 miles long, with an average breadth of 6 miles. It is probable the seams will be found to extend still further to the S.E. The seams occur in varying thicknesses, from an inch to 9 feet. The total thickness of the coal measures in the Nanaimo coal-fields may be safely estimated at 2,500 feet. The Vancouver Island Coal Company are working two beds of 6 and 7 feet respectively at Nanaimo. Their workings were commenced some twenty years ago and have been regularly continued, giving now about 40,000 tons a-year. The area of the Nanaimo coal-field is upwards of 90 square miles.

The existence of a fine quality of coal on the seaboard cannot fail to be of the very greatest importance when the Canadian Pacific Railway converts British Columbia into one of the world's highways. By that time at least three trans-continental railways will connect on the Pacific coast with lines of coasting and ocean steamers, which will get steam coal from the only North Pacific district that can supply it—namely, Vancouver Island. The effect also of a supply of coal on local manufacturing industry cannot be overlooked as an element of future supremacy. The coal-fields in the Nasse-Skina district have not been carefully examined yet. Anthracite coal is found in Queen Charlotte Island, which would be of immense value to the whole Pacific coast could it be worked profitably.

Sir C. Dilke, in his "Greater Britain," well observes, "The position of the various stores of coal in the Pacific is of extreme importance as an index to the future distribution of power in that portion of the world but it is not enough to know where coal is to be found without looking also to the quantity, quality, cheapness of labour, and facility of transport. Tasmania has good coal, but no great quantity, and the beds nearest to the coast are formed of anthracite. The three countries of the Pacific which must, for a time at least, rise to manufacturing greatness, are Japan, Vancouver Island, and New South Wales, but which of these will become wealthiest and most powerful depends mainly on the amount of coal which they respectively possess, so situated as to be cheaply raised. The dearness of labour under which Vancouver suffers will be removed by the opening of the Pacific Railroad, but, for the present, New South Wales has the cheapest labour, and upon her shores at Newcastle are abundant stores of coal of good quality for manufacturing purposes, although, for sea use, it burns 'dirtily' and too fast. The future of the Pacific shores is inevitably brilliant, but it is not New Zealand, the centre of the water hemisphere, which will occupy the position that England has taken on the Atlantic; but some country such as Japan or Vancouver, jutting out into the ocean from Asia or from America, as England juts out from Europe. If New South

Wales usurps the position it will not be from her geographical position, but from the manufacturing advantages she gains by the possession of vast mineral wealth."

The coal-field of *New South Wales* is estimated at 120,000 square miles, and in Queensland the same area is supposed to exist. This great coal-field of New South Wales is found to extend into Queensland, and to reappear in Tasmania. The coal measures reach from the 29th to the 35th parallel of south latitude; they crop out to the water's edge along many miles of the seaboard, and vast carboniferous areas are intersected by two lines of railway, at distances of nearly 100 miles from the metropolis, while the third line, that to the north, runs through coal-fields over nearly its whole length. The New South Wales coal is admirably adapted for steam purposes. It is burnt in all the steamships trading to the southern hemisphere, and meets the English coal in the markets of India and China, at equal prices.

The principal collieries at present worked are situated within 10 miles of Newcastle, a commodious harbour, about 50 miles north of Sydney; but valuable mines are also worked near Wollongong, 60 miles south of Sydney, and at Hartley, about 90 miles inland on the western line of railway. The Australian Agricultural Company's seam is 163 feet from the surface, and 150 feet below sea-level, and its average thickness is about 10 feet. It is highly bituminous, and may be taken as an illustration of several other seams in the same locality, which are, however, nearer the surface. Preparations are being made to work a seam near Murrarundi, 120 miles north-west of Newcastle; and efforts are also being made to bring the coal of the Clarence into the local market.

A large area of the New South Wales coal-fields must long remain undeveloped, except for local requirements, for it is not likely that mines far inland will ever be able to compete with those only a few miles from the ports of shipment.

Locomotive power is used at all the Hunter River mines, and with the shipping facilities which exist at Newcastle at the present time, they are able to load 40,000 tons of coal per week. The means of shipment can, of course, be indefinitely increased.

The late Mr. William Keene, Examiner for Coal-Fields, in a report to the Colonial Government, says, "I have examined seams more than 700 miles to the north of Newcastle, belonging to the same deposits as we are working on the Hunter, covered and underlaid by the same fossil flora and fauna; and we may, without boasting, claim to rank with the most extensive coal-fields in the world."

The Hartley coal measures are the last which have been brought under tribute by the miner, and in a year or two their trade with the western interior must become very great. The coal measures there are close to

the railway, and they are known to crop out over an area of 10 square miles. The seams are from 9 to 11 feet thick, and the coal is used by the locomotives on the Government railway. The area under lease for coal mining, up to the end of 1872, was 34,720 acres; and the number of coal miners 2,150. The prices of coal at Newcastle f. o. b. are—best screened, 12s.; unscreened, 11s.; small, 6s. The miners are paid 4s. 8d. per ton for hewing coal; they work by the piece, but seldom labour more than eight hours, and in that time can average three tons. The quantity of coal raised from New South Wales mines to the end of 1872, was over 10,000,000 tons, of which more than 6,000,000 tons were exported of the value of four millions sterling.

Sir Hercules Robinson, the Governor-in-Chief of the Colony, when he visited Newcastle and the Hunter, in 1872, at a banquet, made the following remarks:—"In its almost unlimited coal-fields, it appears to me that this district possesses a permanent source of wealth, which not only must enrich the immediate locality, but which will, I believe, contribute more than any other of the rich and varied productions of this wonderful country, to establish the future greatness of New South Wales upon a solid basis. The effect which this important industry has had upon the trade and prosperity of Newcastle in the last few years has been very remarkable. In 1829, the item of coal is first mentioned amongst the productions of the Colony; in that year 800 tons, of the value of £400, were raised in the district of Newcastle. At that time, the only means of communication between Newcastle and Sydney was a single cutter, called the *Lord Liverpool*, of 80 tons burden, which frequently occupied two or three weeks on the passage. How different is the position which we see to-day. In 1871, 790,148 tons of coal were raised in the northern coal-fields, of the value of £274,000; of this, 565,000 tons of coal, valued at over a quarter of a million sterling, were exported from the port of Newcastle to 27 foreign and intercolonial ports, in nearly 1,000 vessels. As regards the trade of this port, it appears to me, at present, to rival that of the metropolitan port of Sydney, for I find that in 1871, exclusive altogether of coasters, 1,040 vessels, of 376,000 tons burden, cleared from the port of Newcastle for foreign and intercolonial ports, whilst the total number of vessels, clearing from the whole of the Colony (including Newcastle), was only 2,123, whose aggregate tonnage was 794,000 tons.

"I scarcely remember anything which can compare with the marvellous rapidity with which Newcastle has risen, except some of the incidents which we read of in the fortunes of Aladdin, and I think I may fairly say that your genius of the lamp is coal. Nor do I think that Newcastle is going to remain stationary. Indeed, looking at what has been done during the last few years, and the vastness of your resources, it is difficult to set bounds to the imagination when contemplating the future of

Newcastle, which is destined, I believe, to become one of the greatest of commercial cities in these seas. The place is not only the natural port and outlet for one of the richest and largest agricultural districts in the Colony, with which it is connected by a railway of over 124 miles in length, but, as I have said, it possesses coal deposits of superior quality, capable of being economically worked, conveniently situated for export, and in extent sufficient to supply the world."

In *Queensland* the area over which coal is spread is estimated at more than half of the superficial extent of the whole of England; but little has yet been done towards the development of its coal-mines. The area is, therefore, very large, occupied by the carboniferous formation of the Colony, in which seams of coal of varying thickness and quality are known to exist. At Tivoli, Redbank, and Allora, in the neighbourhood of Warwick and Ipswich, as well as upon the Burrum River, in the Maryborough district, some few coal-seams have been, and still are, worked, but for the present in these localities only. The great extent of the Queensland coal formation, and the number of included seams of that mineral, with accompanying iron ores, induce the belief that there will hence ultimately arise one of the main sources of employment for a large settled population. The Red Bank coal-pits are near Ipswich, twenty miles from Brisbane. The coal-seam is situated on the Brisbane River, near the junction of that river with the Bremer.

In *Victoria* coal-seams exist at Traralgon, Gipps Land, Cape Patterson, Griffith's Point, Coal Creek, Bass' River, and other places in the coal rocks, along the coast of Western Port, also in the Barrabool Hills, near Geelong, in the Cape Conway ranges, and at Coleraine, in the Portland district. Most of the seams vary between a few inches and one foot in thickness; only a few exist at Cape Patterson and Griffith's Point, of a thickness exceeding three feet. These are, however, as far as mining exploration has proved, not of any great workable extent. The coal from some of the seams is of very good average quality, that from Griffith's Point and Cape Patterson resembling mostly "pitch," or "caking coal." Some seams, as at Traralgon, yield a mineral both in chemical composition and outward character, hardly distinguishable from Virginian bituminous coal. It is bright black, rather hard, with small conchoidal fracture, burns readily with bright yellow flame, and yields a good firm coke. This and the Cape Patterson coal prove very good gas coals. The working of the Cape Patterson coal-seams has for several years been repeatedly attempted, but with only poor success hitherto. Although the mineral is of quite as good quality as that of Newcastle, New South Wales, still it cannot compete with the latter in cheapness, a circumstance mainly due to the absence of good roads or tramways for easy access from the mines to the seaboard, combined with the want of good harbour accommodation to ship the coal to the Melbourne market.

Bituminous shales are found associated with, and generally covering the coal-seams. They consist of black or brown slaty and shaly beds, full of carbonaceous and bituminous matter. Most of these shales burn, though somewhat sluggishly, under the influence of a good draught. Brown coal or lignite also occurs in extensive deposits in several parts of the Colony. One at Lal Lal, nearly 120 feet in thickness, is perhaps unparalleled in any part of the world.

In *Western Australia* coal is found, but not yet worked, on the Irwin River, in the Victoria district, and also on the southern coast, near the Fitzgerald River. It is of the character of Welsh coal, well adapted for engine purposes.

Coal exists in most parts of *Tasmania*, east, west, north, and south. Until lately Hobart Town was chiefly supplied from the anthracite mines at New Town, a distance of about 8 miles from the city, and from Tasman's Peninsula. But the Seymour Coal Mining Company now takes its fair share of the trade, the mines of this company are on the eastern coast and supply bituminous coal. But it is generally believed that coal beds of far greater value than these exist in other parts of the island, and Mount Nicholas has long been pointed to as the site of one. This coal-bed is estimated to occupy an area of about 14 square miles on the northern side of the Break-o'-Day Plains.

Beds in the Mersey River have also been found, and, although limited in quantity, have been profitably worked, as they are easy of access. The coal is very bituminous, is used by the coasting steamers and in Launceston, and has been recently exported to Victoria. The bituminous coal from Hamilton is said to be very good; it lies about 40 feet deep, in a seam 4 feet 6 inches thick, and has been used and favourably reported on by the Derwent steamers, from the shipping place of which, at New Norfolk, it is about 20 miles distant. The coal formation on the south side of the island extends round the mouth of the Huon to S.W. Cape, within which range many deposits have been discovered. With a supply so varied and extensive, some localities will, probably, be soon found to possess coal of first-rate character, easy of access.

Crossing now over to *New Zealand*, we find a general diffusion of coal. There are extensive deposits of coal in different parts of the province of Canterbury, to work which one or more companies are being formed. Enough is known, however, of that which crops out along the shore and on the face of inland cliffs, to show that New Zealand possesses incalculable stores of coal. The principal districts in which it is known to exist are Otago and Southland, Nelson and the Waikato, Drury and the Bay of Islands, in the Auckland province.

The Nelson coals of the Grey, Buller, and Massacre Bay, so conveniently situated near Cook's Straits, and those of the Malvern Hills, in

the Canterbury Settlement, are of superior quality, and appear from their analysis likely to be well adapted for marine and naval purposes, and thus to prove a vast source both of wealth and power.

Some ten years ago an excellent account of the coal-fields of the Province of Nelson was published in the *Nelson Examiner* (August 20, 1864). Mr. Burnett, who was charged with the official examination, reported that on this particular part of the coal-field there were 76,600,000 tons of coal, which could be brought to the Buller Harbour by means of a railway in no place exceeding 18 miles in length; but for many years 12 or 13 miles would be sufficient, and, possibly, only 9. This quantity would supply 2,000 tons a-day, or 600,000 tons a-year, for 121 years.

The coal of the Kawa Kawa mine, Bay of Islands, 6 miles from the water, up Kiri Kiri river, is of a superior quality, and equal to New South Wales for steaming purposes. The thickness of the seams varies from 6 to 16 feet. The Wangarei coal-field now supplies coal to the inhabitants of Auckland. This coal is said to be equal in quality, and is thought to be a continuation of the same seam as the Bay of Islands.

We must not overlook in our colonial survey the great continent of India.

The carboniferous system of India lies almost entirely between the 20th and 26th degrees of latitude, comprising a belt of about 400 miles in width, and this is almost entirely within the British territory. Two principal coal-fields in this area are now worked, that of Nerbudda, which approaches within a few miles of the Great Indian Peninsula Railway, and that of Raneegunge, 120 miles from Calcutta, on the loop-line of the East Indian Railway. Of these, the Raneegunge field has been by far the longest worked. The intrinsic value of this coal is, however, generally estimated at scarcely two-thirds of the best English coal. The coal trade of India is daily becoming of greater importance. The amount raised has considerably more than doubled in the last ten years. The mines are gradually being extended, and worked in a better manner than formerly, and the coal is sent to market in a better state. Mr. T. Hughes, C. E., in his report, dated January, 1873, states that, taking the coal-fields, already partially or in whole examined in India, and allowing for the unsurveyed portions of central India—Assam, Burmah, and the Tenasserim provinces, &c.—we may safely assume the area over which coal-rocks abound, at 35,000 square miles. In India, the Raneegunge coal-field, alone, contains from 100 to 120 feet of workable seams, and the quantity is estimated at 14,000,000,000 tons. According to Dr. Oldham, only one or two kinds of Indian coal come up to the average of the English specimens. The quantity of Indian coal used in Bengal, from 1859 to 1866, by the railways, and steamboats on the Ganges, was 2,700,000 tons. The quantity of English coal that was imported during that time

was 332,000 tons. In 1872, the large quantity of 7,239,205 tons of coal was imported into India from foreign countries. The imports from England range from 600,000 to 700,000 tons.

Mr. Donaldson, who was commissioned by Lord Mayo to examine the coal measures in some parts of India, in his report estimated one coal-field, in the Hazareebagh district, to extend over an area of about 500 square miles, and the iron ore about the same. The coal in Upper Assam and Cherra is of very good quality, in fact, quite equal to that of any English colliery. The great difficulty at present is the cost of bringing down the latter from the hills on the backs of human beings; but this will, doubtless, be remedied by the wire-tramways now being introduced into India. Captain F. Forsyth, in his interesting survey of the Highlands of Central India, 1871, describes an enormous area of this district as full of coal measures. India, therefore, has seams of magnificent coal lying on the surface, which could be excavated at a nominal cost, whilst coal is being sent thither from England across 10,000 miles of sea.

The Island of Borneo is admirably situated for the supply of our Naval and Mercantile Marine in eastern waters; though but a mere speck on the map of the world, it appears to contain a vast supply of coal, which is reached at a very moderate depth. The Oriental Coal Company has, at length, fairly set to work with the view of reaching the 11-foot seam at an estimated depth of 100 fathoms, a work which will require some time, and upon which the fortune of the present enterprise may be said to depend.

One great group of Colonies remains to be noticed, the South African, which, if not rich in coal, yet possesses black diamonds which may hereafter become more valuable than the finds of white diamonds. In the Cape Colony, indications of coal have been met with in the mountain basin of Tulbagh, a district equi-distant from Table Bay, Saldanha, and St. Helena Bays—only forty to fifty miles from each. So that, should it prove valuable, it is most happily placed; but, as yet, there has been little temptation to explore it. In the eastern townships also, coal exists. It is excavated for local use in the Storm Berg, and is also reported to have been found in the neighbourhood of Port Alfred, and at other places within a very moderate distance of the coast. At Natal there are some indications of coal, near the capital and port. In the far north-east corner of the Colony on the Tugela, about 120 miles distant from the port, a good coal-field has been discovered, and the district has been given the name of Newcastle. In consequence of its remoteness, and of the want of roads or navigable rivers, it is, of course, alike useless to the capital and the port, and to the lines of steamers which unite it with the cape and the rest of the world, and to the sugar plantations on the fertile belt of coast line; but happily there is a near prospect of the formation of a railway to bridge the distance.

DISCIPLINE.

IT has been broadly asserted by some of our intellectual giants of modern times, that all associations for the promotion of missionary enterprise abroad, and for the amelioration of lower classes at home, are futile. They further assert that it is only the suppression of evil, in every shape or form, which will result in anything like the happy time predicted by poets, when millennial lions shall be housed with millennial lambs. Whether these great men are right, or not, in the views thus advanced, we leave such others, as Professor Cairnes, to gainsay. There can, however, be no error in asserting the principle of suppression of ill-doing wherever it is found. In this neutral ground, both philosophers and theologians will meet and shake hands. For, with the one set of men the dogma is proved by the success, and indispensability of our police system; with the others the principle runs in the same groove as does their own cherished "Decalogue." Hence it is that in all "well-regulated society," a code of discipline is set up to keep things in proper order. Of course this code must be somewhat elastic, and adapted to different phases of society. Cowper says :—

"Oh, why were farmers made so coarse,
Or clergy made so fine?
A kick that scarce would move a horse,
May kill a sound divine."

It would appear, therefore, that a sliding scale of punishment is the one best fitted for the wants of men. Paddy's advice to his son at the "fair" was "whenever he saw a hat to hit it." So should it be with all iniquity, of whatever grade. One of our old authorities on law (we think it was Blackstone) has said, that it is not necessary to have heavy sentences upon criminals, but what is wanted is the unfailing exercise of penalty of a milder grade, on everyone who commits a wrong. A Nemesis, so to speak, should follow every evil-doer; and regularly and systematically bring him to justice. In doing all this not only do we put down that which is bad, but, sequentially, more air—more vitality—more room is left for the "good" to be developed.

One of the most effective "points" made by the Royal Commissioners, in their able report on unseaworthy ships and sailoms, is the reference they make to the decadence of discipline on board ship. They emphatically state that the influence of the captain of a ship has been lowered; and that, for the safety of all concerned, it is essential that his

hands should be strengthened in this matter. No doubt this recommendation will be carried out by the Legislature. There are certainly various points of the Act which might be improved, especially in the disciplinary clauses. But it has frequently struck us, and, in consequence, the question has often presented itself to our mental eye—Do master mariners, generally, know the powers which they already possess? And, as invariably, has the response been given that they do not. If the 243rd clause of the Merchant Shipping Act of 1854, taken in conjunction with the 246th, were more studied and applied, we would not hear so much of mutinous crews, desertion, &c. Indeed, it is a question whether it should not be made a portion of a ship's officer's examination, to instruct him in the art of keeping a vessel's crew in proper discipline. It seems to us as necessary that a master should be able to guide his crew aright as to navigate the ship in which they sail together. As a proof of the value of those sections of the law which are now existing, we have pleasure in referring to the Cardiff returns for 1874, of convictions, as made to the Stipendiary at that port by the Superintendent of Mercantile Marine. It appears by those statements that during the past year there were shipped in foreign-going British vessels 20,690 seamen, of whom 427 neglected to proceed to sea after signing articles. This would make a percentage of loss of 2·06, which is an improvement on previous years, and a great contrast to the time when there were no police at the shipping office, and this offence was simply wholesale and unchecked. Out of this number of 427, there were 84 convicted and sentenced to an aggregate punishment of 482 weeks' imprisonment with hard labour, or an average of about six weeks each. Besides these, twenty-one were brought before the Justices, who, finding some extenuating circumstances in each case, let them off with a caution, which, to a person who was not "case hardened," would probably have as deterrent an effect as if a term of gaol labour had followed. There is another feature in these returns worth a passing notice, and that is the number whom owners of ships refused to prosecute. These were no less than 104, or about one-fourth of the entire number. It so happens that the law gives to the "other party" to the agreement the right to pursue, and rightly so. Otherwise, a well-known maxim in English jurisprudence would be violated. But if the offended party will not exercise that privilege, how can he expect protection? And what right have owners of ships to complain of desertion when they condone the offence, so to speak?

With regard to the desertions which take place at Cardiff from vessels having unexpired agreements, when visiting the port to load, another interesting return is given, and it is surprising to see with what seemingly scientific accuracy these accounts have been collated; for, we are not aware of any similar ones being given by any other port. It appears that in 1874 the number of British vessels (other than coasters), with these agreements

was 854, having on board at arrival 13,670 seamen. Out of this number 405 deserted, or about 2·96 per cent. The plan of keeping these records was adopted on the 1st January, 1873, consequent on the visit of Messrs. Gray and Hamilton, of the Board of Trade, a short time previously. Great complaints had been made by owners and masters of ships of the difficulty of keeping their crews at that port. It was therefore considered desirable to know accurately what was the real loss. At the end of 1873 the figures stood thus :—830 ships ; 13,692 men ; 465 deserters, or 3·39 per cent. The figures for last year improve upon these. Out of the number deserted last year, sixty-six were arrested by the Mercantile Marine Police. Of these, fifty-three were sent to prison, and thirteen were excused by the Bench. There is, however, a great number who are never prosecuted at all ; they walk about with the brand as it were of the deserter upon them, but no policeman thinks of putting a finger upon them. Why ? Because the masters have declined to put the law in force, and they alone can do so, as we have already given reasons for. No less than 242, or nearly two-thirds of the number, were allowed thus to run the gauntlet. We are afraid that in too many cases, Jack is simply permitted to desert for some ulterior reason. This really should not be allowed, and we urge upon shipowners the absolute necessity of keeping their captains up to the disciplinary mark. The practice of allowing men to leave their ships by giving them their old discharges back, and without officially discharging them, is demoralizing in the extreme. We have seen many cases where honest and true men found themselves so branded, and have marked the pain and distress which the after-knowledge of it gave them. Can we wonder at the deterioration of the Mercantile Marine when such courses are taken by those who ought to be leaders of opinion, and practice in it ? We shall never have a less number of wrecks until we have more seaworthy crews. That is now considered an axiom. But it is not the less true, that should these good crews ever be got, they will be still made unseaworthy if they are not made to stick to their agreements, and have the example set them by their captains and officers.

We have only space to glance at another feature of these valuable returns, which certainly do credit to the zealous officers who have furnished them, and worked the provisions of the law so well upon which they are founded. It is the final return which summarises the convictions, and in which we find not only prosecutions for “neglecting to join ship” and “desertion,” but for “stealing,” “carrying seamen without agreement,” “attempting to persuade seamen to desert,” “desertion from Royal Navy” and from “foreign ships,” “using false certificate of discharge,” “felony,” “harbouring deserters,” “disobedience of orders on board ship,” “obtaining money, on advance notes, under false

pretence," "threatening to do bodily harm," &c. The moral of this last statement is that the law has been dealt out very impartially. Not only has the defaulting sailor been punished, but the evading captain, the swindling rogue, and the kidnapping crimp, have all come in for a share of well-merited punishment. The idea of the Decalogue, that of the Nemesis of the Greeks, and the one so strongly advocated by the modern *savant*, appears to be understood, and, what is far better, is acted upon, at the famous Welsh port. It is the right system to go by; and we do not despair of seeing the same plan carried out in every other British port and in every British ship. Then the old lion spirit of England will have fair play and will not desert us—for Britannia's bulwarks will be manned by similar crews to those who of yore knew so well to rouse at the call of "duty," who acted together with that power of cohesion which discipline alone can give; and which alone is the cause of all success and the secret of every victory, whether it be over the "spirit of the storm" or over the foreign foe.

VASCO DE GAMA.

MR. LINDSAY'S great book on Merchant Shipping, besides conveying solid information, contains many chapters of delightful reading. His account of the atrocities of the voyages of Vasco de Gama, under the authority and for the glory of the Catholic and Apostolic Church, form a fine sequel to Mr. Gladstone's Pamphlet.* The following extracts are a fair specimen of the forcible style in which Mr. Lindsay writes, and of the thorough common sense of this book. The illustration given in the present number of the *Nautical* is from Mr. Lindsay's first volume, and represents the *San Gabriel*, the ship in which Vasco de Gama sailed on his first Indian voyage from Lisbon, on the 9th July, 1497. For the particulars of the first voyage we must refer our readers to Mr. Lindsay's book, but from his account of the second voyage we make the following extracts:—

"Ten large ships were therefore prepared, fitted with heavy guns and munitions of war of every kind then known, besides abundance of stores, and with these, and five lateen-rigged caravals, Dom Vasco set sail for India on Lady-day, the 25th March, 1502, to wreak his sovereign's

* "History of Merchant Shipping and Ancient Commerce." By W. S. Lindsay, in four volumes, with numerous illustrations. London: Sampson, Low, Marston, Low, & Searle, 188, Fleet Street, 1874.

'vengeance' on those contumacious kings of the East who had not treated his subjects with the respect which he felt was due to the representatives of 'a great Christian monarch.' In this instance, as has been the case before and since in numerous other instances, solemn prayers were offered that the depredations about to be committed in the name of God and under the banner of a Christian King might be attended with success. 'I feel in my heart,' exclaimed De Gama, addressing his sovereign, 'a great desire and inclination to go and make havoc of him (the King of Calicut), and I trust in the Lord that He will assist me, so that I may take vengeance of him, and that your highness may be much pleased.' But though 'vengeance is *Mine* saith the Lord,' has been the text of every Christian Church from the earliest ages, a solemn mass and numerous prayers were offered in the cathedral, at which the King was present and all his Court, to invoke Heaven to strengthen the arm of Dom Gama in his openly-avowed mission of vengeance.

"In the fifteen sail of vessels composing the second expedition, there were 'eight hundred men at arms, honourable men, and many gentlemen of birth, with the captain-major and others, his relations and friends, with the captains.' Each soldier had three cruzados a month, and one for his maintenance on shore, besides the privilege of shipping on his own account two quintals of pepper, at a nominal rate of freight, and subject only to a small tax, 'paid towards the completion of the monastery at Belem.' Considerably greater space was allowed in the ship to the masters, pilots, bombardiers, and other officers, a practice which prevailed to our own time in the ships of the English East India Company.

"'When the fleet was quite ready to set sail from the river off Lisbon, after cruising about with a great show of banners, and standards, and crosses of Christ on all the sails, and saluting with much artillery, they went to Belem, where the crews were mustered, each captain with his crew, all dressed in livery and galas, and the King was present, and showed great favour and honour to all.' Here the fleet lay for three days, and when the wind became fair, the King went in his barge to each ship, dismissing them with good wishes, the whole of the squadron saluting him with trumpets as they took their departure."

"From Mozambique the expedition proceeded to Quiloa, but remembering the treachery of the King of that place, De Gama, after he had moved his fleet within range of the town, sent the following message to his sable majesty: 'Go,' he said to an ambassador whom the King had sent on board, 'go and say to the King that this fleet is of the King of Portugal, lord of the sea and of the land, and I am come here to establish

with him good peace and friendship and trade, and for this purpose let him come to me to arrange all this, because it cannot be arranged by messenger. And in the name of the King of Portugal, I give him a safe conduct to come and return, without receiving any harm, even though we should not come to an agreement; and if he should not come, I will at once send people on shore, who will go to his house to take and bring him."

"But the captain-major required something more than this. 'If,' said he, 'the King of Quiloa became a friend of the King, his sovereign, he must also do as did the other kings and sovereigns who newly became his friends, which was that each year he should pay a certain sum of money or a rich jewel, which they did as a sign that by this yearly payment it was known that they were in good friendship.' In a word, that he should subject himself and his dominion to the government of Portugal. The African King seems to have clearly understood and felt the force of this plausible mode of abdicating his sovereign rights, for he replied, 'That to have to pay each year money or a jewel was not a mode of good friendship, because it was tributary subjection, and was like being a captive; and, therefore, if the captain-major was satisfied with good peace and friendship without exactions, he was well pleased, but that to pay tribute would be his dishonour.' The captain-major, however, cared little for anything except submission. 'I am the slave of the King, my sovereign,' he haughtily replied, 'and all the men whom you see here, and who are in that fleet, will do that which I command; and know for certain, that if I chose, in one single hour, your city would be reduced to embers; and if I chose to kill your people, they would all be burned in the fire.' Thus the Western nations, under the plea of peace and friendship, and on the pretence at first of only desiring to establish factories for the purposes of peaceful and mutually beneficial commerce, became lords of the East, and for centuries exercised a dominion founded on despotism and injustice over its native sovereigns. The King of Quiloa might remonstrate as he pleased, submission was his only course. 'If I had known,' he replied, with great warmth and energy, 'that you intended to make me a captive, I would not have come, but have fled to the woods, for it is better to be a jackal at large than a greyhound bound with a golden leash.' 'Go on shore and fly to the woods,' said the now exasperated representative of the Christian King—'go on shore to the woods, for I have greyhounds who will catch you there, and fetch you by the ears, and drag you to the beach, and take you away with an iron ring round your neck, and show you throughout India, so that all might see what would be gained by not choosing to be the captive of the King of Portugal.' And this Christian speech was accompanied with an order to his captains 'to go to their ships, and bring all the crews armed, and go and burn the city.'"

"The King paid a ransom, valued at 10,000 cruzados (£1,000 sterling), which he gave with other perquisites to the 'Christian' ambassador, who immediately afterwards pursued his voyage to Melinde."

"Soon after their departure they fell in with five ships, which had been fitting out in the Tagus for India when Vasco de Gama sailed, and which had been placed under the command of his relation Esteven de Gama. The combined fleets proceeding on their voyage, called at the 'port of Baticala, where there were many Moorish ships loading rice, iron, and sugar for all parts of India.' The Moors, on the approach of the Portuguese, prepared to offer resistance to them entering the harbour, by planting some small cannon on a rock which was within range of the bar. The boats, however, belonging to the Portuguese ships made their way into the harbour without damage, although amid showers of stones from the dense mass of people who had collected to resist their approach, until they reached some wharves, which had been erected for the convenience of loading the vessels frequenting the port. The Moors then fled in great disorder, leaving behind them a large quantity of rice and sugar, which lay on the wharf ready for shipment, and the Portuguese then returned to their boats in order to proceed to the town, which was situated higher up the river. On their way, however, a message was sent from the King of Baticala to say that, though he 'complained of their carrying on war in his port, without first informing themselves of him, whether he would obey him or not, he would do whatever the captain-major commanded.' Upon which De Gama replied, 'that he did not come with the design of doing injury to him, but when he found war, he ordered it to be made; for this is the fleet of the King of Portugal, my sovereign, who is lord of the sea of all the world, and also of all this coast.'"

"On the passage the expedition encountered a heavy storm, and sustained so much damage that it was necessary to anchor in the Bay of Marabia for repairs. Here they fell in with a large Calicut ship from Mecca, laden with very valuable produce, which the captain-major pillaged, and afterwards burned, because the vessel belonged to a wealthy merchant of Calicut, who he alleged had counselled the King of that place to plunder the Portuguese on their previous voyage. Nor were these Christian adventurers satisfied by this act of impudent piracy; they slaughtered the whole of the Moors belonging to the ship, because they had stoutly resisted unjust demands, the boats from the fleet 'plying about, killing the Moors with lances,' as they were swimming away, having leapt from their burning and scuttled ship into the sea."

"Dom Gama sailed with his combined fleet for Calicut, where, on arrival, he found the port deserted of its shipping, the news of his doings at Onor and Baticala having reached the ears of the people of Calicut;

the King, however, sent one of the chief Brahmins of the place, with a white flag of truce, in the vain hope that some terms of peace might be agreed upon. But the captain-major rejected every condition, and ordering the Indian boat to return to the shore, and the Brahmin to be safely secured on board of his ship, he bombarded the city, 'by which he made a great destruction.' Nor was his vengeance satisfied by this wanton destruction of private property, and the sacrifice of the lives of many of the inhabitants of the city; while thus engaged 'there came in from the offing two large ships, and twenty-two sambacks and Malabar vessels from Coromandel, laden with rice for the Moors of Calicut: these he seized and plundered, with the exception of six of the smaller vessels belonging to Cananore. Had the acts of this representative of a civilised monarch been confined to plunder, and the destruction of private property at sea and on shore, they might have been passed over without comment as acts of too frequent occurrence; but besides this, they were deeply dyed with the blood of his innocent victims. The prayers he had offered to God with so much solemnity on the banks of the Tagus proved, indeed, a solemn farce; his own historian adding the shameful statement, that after the capture of these peaceable vessels, 'the captain-major commanded them' (his soldiers) 'to cut off the hands, and ears, and noses of all the crews of the captured vessels, and put them into one of the small vessels, in which he also placed the friar, without ears, or nose, or hands, which he ordered to be strung round his neck with a palm leaf for the King, on which he told him to have a curry made to eat of what his friar brought him.

"Perhaps no more refined acts of barbarity are to be found recorded in the page of history than those which Correa relates with so much simplicity of his countryman; they would seem, indeed, to have been almost matters of course in the early days of the maritime supremacy of the Portuguese, and may in some measure account for the unsatisfactory condition into which that once great nation has now fallen. Supposing, however, the exquisite barbarism of sending to the King the hands, ears, and nose of his ambassador, to whom *Dom Gama* had given a *safe conduct*, not enough to convey to the ruler of Calicut a sufficiently strong impression of the greatness, and grandeur, and power, and wisdom, and civilization of the Christian monarch, whose subjects he had offended, the captain-major ordered the feet of these poor innocent wretches, whom he had already so fearfully mutilated, 'to be tied together, as they had no hands with which to untie them; and in order that they should not untie them with their teeth, he ordered them' (his crew) 'to strike upon their teeth with staves, and they knocked them down their throats, and they were thus put on board, heaped up upon the top of each other, mixed up with the blood which streamed from them; and he ordered mats and

dry leaves to be spread over them, and the sails set for the shore, and the vessel set on fire.'

"In this floating funeral pile eight hundred Moors, who had been captured in peaceful commerce, were driven on shore as a warning to the people of Calicut, who flocked in great numbers to the beach to extinguish the fire, and draw out from the burning mass whom they found alive, over whom 'they made great lamentations.'"

"But the King of Calicut, either anxious to avoid war, or to obtain information of the condition and power of the vessels then under Dom Gama, sent a confidential Brahmin to Cochym, with a letter to the captain-major, in which, after stating the force now at his command, he expressed a wish that there should be 'no more wars nor disputes' between them, and that he would make compensation for the injury his people had sustained on the previous voyage; but the Brahmin received no better treatment than his predecessor had done. He was tied to the bits, or framework that surrounds the main-mast; an iron shovel, full of embers, was put 'close to his shins, until large blisters rose upon them, whilst the interpreter kept shouting to him to tell the truth,' as to whether the King his master meant what he said in the letter he had addressed by him to Dom Gama; but as he would not speak, 'the fire was brought closer by degrees, until he could not bear it,' and when he had told all he knew, the captain-major 'ordered the upper and lower lips of the Brahmin to be cut off, so that all his teeth showed; and he ordered the ears of a dog on board ship to be cut off, and he had them fastened and sewn with many stitches on the Brahmin, instead of his, and he sent him in the Indian boat to return to Calicut!'"

"When Dom Gama had completed his arrangements at Cochym, he sailed for Cananore. The King of Calicut with his fleet lay in wait for him. 'Coming along the coast with a light land breeze, there were so many sail' that the Portuguese did not see the end of them. In the van there might be as many as 'twenty large ships, with many fustas and sambacks.' These Dom Gama ordered his caravals, each of which carried thirty men with four heavy guns below, and six falconets, and ten swivel-guns on deck, to attack, which they did with great vigour, and soon brought down the mast of the flag-ship of the Moors, killing many of the crew, and sinking three of the large vessels. Amid this havoc, Dom Gama himself bore down with the rest of his fleet, and, as the wind freshened, he came with great force through the midst of his opponents, 'doing wonders' with his artillery, and firing both broadsides as he passed, shattering them both in hull and rigging, and leaving the Calicut fleet almost a helpless mass.

"But conquest and submission were not enough for this Portuguese maurauder. His fiendish spirit of revenge seems to have had no limits.

He 'sent the boats with falconets and swivel-guns, and in each boat twenty armed men, with crossbow-men, to go to the ships which were becalmed, and shoot at them above and kill the crews. This they did, so that the Moors threw themselves into the sea, and went swimming round the ships.' Gama then 'sent his boat to the ships and caravals, to tell the crews to flock to the Moorish ships and plunder them, and set them on fire.' After which he proceeded on his course for Cananore, 'giving the Lord great praise and thanks for the great favour which He had shown him.' "

"On the 1st of September, 1503, Vasco de Gama completed his second voyage and reached Lisbon, anchoring 'before the city,' with 'ten ships laden with very great wealth, after leaving such great services accomplished in India.'

"When the King of Portugal heard the news of Dom Gama's arrival he was greatly rejoiced, and sent the captain of his guard to bid him welcome, he himself proceeding on horseback with many people to the cathedral, 'to give much praise to the Lord before the altar of Saint Vincent,' an example which the captain-major and all his captains soon afterwards followed; when prayers were ended, he kissed the hand of the King, who bestowed many favours upon the officers and crews of the ships, while granting to Dom Gama and his heirs 'the anchorage dues of India,' and conferring upon him and his descendants the title of the 'admiral of its seas for ever.' "

"De Gama having gone out finally a third time as Viceroy was seized with a fatal illness; and having, as Correa states, 'set his affairs in order, like a good Christian, with all the sacraments of the church, and ordered that his bones should be conveyed to the kingdom of Portugal, he died on Christmas Eve, 24th December, 1524.' "

THE CHARTOMETER.—We have received the circular of an ingenious little invention by Mr. Edward R. Morris, of Birmingham, for measuring distances on charts; it is in shape and size like an ordinary watch, with a projection instead of the ring. At the end of the projection is a fine milled wheel, which is connected with what would represent the minute hand of the watch, while the dial is a card (of which there are several), marked round in inches, or parts of an inch, representing the scale of the chart. The milled wheel is moved gently along the face of the chart from one point to the other of the distance required, and the distance is registered by the hand. The great diversity in the scales of our charts, will, we fear, effectually prevent this little instrument being so generally used as it seems to deserve. For river work, the distances are far more easily measured by this instrument than with the ordinary dividers.

WANTED : A MINISTRY OF COMMERCE.

BEFORE we can issue another number of the *Nautical*, our national Parliament will have reassembled; and, we earnestly trust, will, looking to Mr. Forster's speech at Bradford, have been afforded, or if not, will have demanded and obtained, a fitting opportunity for discussing the many important topics raised under the simple words, "Our Merchant Ships and Merchant Seamen." It will, indeed, be sad, if one night early in the session cannot be given to our Commerce, now that the claims of Ballot, Reform, Lucifer Matches, Church, Beer, and Bible, have been disposed of.

Beer and the Bible contain in themselves for ever enough of interest and moral force to set the two great parties of the greatest State in the world at loggerheads; and have, but just recently, assisted to turn out of office one of the strongest of ministries. It is our misfortune, as a nation, that brother "Bung" has a political existence, which brother "Jack" never has had, and, *ex necessitate rei*, never can have. It is singular that the people of Great Britain, the chief of all maritime States, will rack the country, and waste months of talk on questions relating either to the exact moment for closing public-houses, or to the length and colour of a parson's vestment, or the details of his gestures, but will not afford one whole night in a session for the consideration of merchant shipping matters. A people dependent for their food and clothing, nay, even for their very existence, on our merchant ships and merchant seamen, not only pay no consistent attention to the subject, but even do not care to provide funds to establish an office of State in which it can be adequately dealt with. At the same time, members of Parliament who can get no votes from seamen, do not take that warm interest in them that they do in publicans and parsons. We do not say that this is the case with all members of Parliament; but a cynic once said, that out of the mystic 658, the eight would very nearly cover the exceptions.

In our foregoing remarks, we do not mean to imply that shipping questions are not sometimes discussed; but what we do mean to imply is, that they are either generally shunted to make way for something else, or that the discussion raised takes a direction that is more personal and less broad and patriotic than the subject demands. It is said that shipowners, like railway directors, are powerful in Parliament; but seamen are not. However this may be, there can be no doubt that, had the nation and the nation's representatives given as much attention to our merchant ships and merchant seamen as they deserve, or had they

given the Chief of the Department dealing with the subject a sufficiently authoritative and important position, such a bewildering but well-meant agitation as that recently led by a member for an inland town would have been impossible.

In every other important maritime State on the globe, and, indeed, in some of our Colonies, there is a high Government Department or Bureau, having charge of maritime affairs. But the empire of Great Britain, with her twenty-six thousand ships, her seven and a-half millions of tons of shipping, her seven hundreds of millions of pounds sterling worth of exports and imports, her lighthouse system (or want of system), a life-saving organization such as the world never before saw round her indented shores, and her half-a-million of seamen and fishermen always afloat, can only afford that the welfare of her merchant ships and merchant seamen can be entrusted to a petty sub-department in an office, created for different purposes, and already over-burthened with other weighty matters. It thus comes to pass that the English Bureau, dealing with merchant ships and merchant seamen, a Bureau that assumes to lead the whole world in maritime matters, whose motto is "*non nobis solum, sed toti mundo nati*," occupies, within Britain herself, a position subordinate to, and to a certain extent dependent on, another Bureau, whose functions include the prosecution of criminals, and the numbering and lettering of cabs. But, this is not the worst; for, in the Board of Trade itself, our merchant ships and merchant seamen are co-ordinate with railways, gas, joint stock companies, designs, and so forth, and consequently get just so much attention, and no more, as can be given to them with other matters. A minister (not being in the Cabinet), receiving £2,000 a year, a chief permanent secretary with £1,500 a year, and a Parliamentary secretary at £1,500 a year, are deemed by the people and Parliament of England enough as heads to keep right (or as prickly people, like one or two of our Scotch friends, would say, to interfere with) all lights, buoys, and beacons, the dangers of navigation, cotton statistics, the ownership, measurement, and registry of ships, the training of merchant seamen, the survey of unseaworthy and overladen ships, the prosecution of offenders against merchant shipping laws, the administration of railway affairs, the wardenship of the standards of all weights and measures, the passing for traffic of railways and railway bridges, and metropolitan tramways, the rule of the road at sea, the registration of joint stock companies, the quality and supply of gas, the heavy work connected with inquiries into casualties on railways, the examination of masters, mates, and engineers of ships, the inspection of steam ships and steam boilers and machinery afloat, the accounts of life assurance societies; and to deal with various other subjects and matters, for which no other god-fathers have been found. In administrative affairs, "*Nobody's Child*" may always be affiliated to the Board of Trade.

We have grave doubts even whether the Royal Commissioners on unseaworthy ships have taken a sufficiently extended view of the fundamental requirements of any department dealing with our merchant ships and merchant seamen. Mr. Thomas Brassey, M.P., one of the Royal Commissioners, has certainly not even been fully informed, as to the Marine Department itself, for, in a supplementary report of his own, which he has given to the world, he distinctly states that certain work, which can only be done, and, as a fact, has for years been done, by an engineer, is done by a sailor. But, whatever may have been the cause which led the Royal Commissioners on unseaworthy ships to pass over in silence the question of establishing a department, to be presided over by a Minister of Marine and Commerce, they could not withhold an expression of opinion as to the weakness of the present state of things. There can be no doubt that the marked ability of the permanent head of the whole Board of Trade must have led the Royal Commissioners to think that the whole office is more fit for a mixture of marine and other work than it really is; that the power of the head to grasp all subjects and all work at all moments, has led them, to some extent, to overlook the inadequacy of the body to be equally accommodating or equally assimilative. The bureau at Whitehall Gardens really represents one of those images on an old tombstone—that is, apparently all head and wings—owing either to absence of a real body, or to the body, from some cause or confusion of circumstances and subjects, having become absorbed, effaced, or imperceptible. The Royal Commissioners on unseaworthy ships found it impossible to fail to appreciate the powers of the Chief Permanent Secretary, nor did they fail also to appreciate in a minor degree the work done by other permanent officers under the chief's directions. We, of course, refer to that small knot of hardworking, uncomplaining, and heartily-abused men, who in their minor positions form the real Marine Department and its staff. Some of these men are certainly not devoid of sense and ability, some possess experience, others have a special fitness and aptitude for the special work they do, and none, we should say, for zeal and love of their own work will yield one jot to their chief. Some of these men have names that are known, not only in this country, but in all maritime countries, but they have only one set of subjects (marine) always before them, while with their chief that one set is a part, and only a small part, of the sum of the subjects taxing his mental powers. Re-construction is better than revising and strengthening.

There are, we believe, four Assistant Secretaries at Whitehall Gardens, who have, it seems, some sort of minor charge and minor responsibilities in the various departments, into which the Bureau of

Trade is divided, but these gentlemen are not worth consideration in the present argument. Their places are of small importance in the consideration of any extended scheme such as that which must force itself on the public, and which must end altogether in the disruption of the present office; each part of which will either go to make a nucleus for a future Bureau, or fall in with some existing bureau, where it will form part of a consistent whole.

So impressed were the Royal Commissioners on unseaworthy ships that the hands of the Permanent Secretary of the Board of Trade needed much strengthening, that they emphasised their opinion in a distinct paragraph in their report in the following words:—"We attach great importance to the recommendation that the Marine Department of the Board of Trade should be revised *and* strengthened." It will, no doubt, be one of the first questions asked in Parliament, whether and how this revision and strengthening have been affected?

The Royal Commissioners on unseaworthy ships further recommended that, "A legal adviser, *exclusively* belonging to the Department, is also essential for the conduct of the business." But what do the Royal Commissioners mean by Department? Do they mean a fifth of the whole so-called "Board" (that is, the Marine Department), or do they, by the word Department, mean the whole Bureau? The Chief Permanent Secretary of the Board of Trade would be puzzled to tell how much of himself is secretary to each department, or how much each assistant secretary at the head of any one of the five departments is assistant secretary to the whole Board. There is no whole secretary to the Marine Department, or to the Railway Department, or to any department; and yet there is a fifth of a whole secretary and one whole assistant secretary for each department, and the fifth of the whole is a secretary to each. There are no assistant secretaries to the Board of Trade, but there are assistant secretaries to each fifth of the Board; and yet there is only one secretary. This reminds one of an affair to be worked out by Algebra.

We take it that the Royal Commissioners mean that the learned chief at the head of all the departments requires a legal staff, for so much of his duties as belong to one of them—viz., the Marine. But, then, we come to this important question, what is the use of all this revising and strengthening and adding to a part of a bureau that is, as a whole, in itself wanting in coherence and fitness for the special work to be done? Is not all this patching but short-sighted policy at the best? Instead of attempts to revise a subordinate department, would it not be more in accordance with the requirements of the case, the spirit of the age, and the aspirations of the people, if a ministry or bureau

of commercial marine were established. Attempts to revise and patch an insignificant and subordinate department in the hope that it may rise to its true position in this country or among nations, will, as we trust by this time is admitted by thoughtful men, end in failure and useless lavish expenditure. As regards the present "Bureau," or "Ministry," or "Office," in Whitehall Gardens, the outside world think that the term, "Board of Trade," really has a meaning, and that the expression, "My Lords," in official letters, means actual living persons. The expression, however, as our readers well know, is a pure fiction, a mere form of olden times, to be assumed perforce by all new political holders of office, and a euphemism that furnishes young clerks on entering Her Majesty's service, with their first lesson in the mystery of official circumlocution. There is no "Board" and there is no "Trade" at Whitehall Gardens. The masses seem to think, and with reason, that a Board of Trade is a sort of guild, corporation, or brotherhood regulating trade rules and trade subjects, dealing with the supply and demand of manufactured goods, and regulating trading concerns and labour generally. "Trade," in the usual acceptance of the term, is, however, wholly ignored. Persons having to do with the shipping of the Empire, form one opinion of the Board of Trade, and that is, that it does not help them; persons having to do with railways form their opinion also, which is not flattering to the fictitious "My Lords;" persons having to do with gas, form other conclusions; and, if we may judge from the last article in the *Review*,* persons connected with life assurance societies again form others; and as to lawyers, they are moved at times to ridicule, at times to other feelings, on watching the exceedingly crude method of Board of Trade business. Seamen and the public are in a haze, and, as usual, often confuse their best friend with their worst enemy; but whatever may be the peculiar and personal estimate that various bodies form of the particular Department of the Board of Trade they have to do with, they come often in a roundabout way to the conclusion, so patiently and wisely arrived at by the Royal Commissioners on unseaworthy ships, that the Department ought to be

* *The Review*, a contemporary taking a great interest in assurance societies and in other subjects requiring Actuarial knowledge, calls attention in its issue of the 26th Dec., 1874, to the curious fact that the accounts of life assurance societies are dealt with by the *Railway* Department of the Board of Trade, and speaks of it as follows: "The Department with which we are most immediately concerned is the *Railway* Department of the Board of Trade. This Department, for some inscrutable reason, was selected as being the proper one to look after the life assurance companies of Great Britain. Upon the exact process of reasoning which connected the railways with life assurance we cannot give an opinion, but we have as yet seen no proofs of the wisdom of the selection."

revised and strengthened. One inconvenience of the present state of things is, that so long as the old office in Whitehall Gardens calls herself a "Board," everyone is interested in planing, or cutting, or glueing, or patching, or strengthening her. Some well-intentioned persons recommend that a "Parliament of shipowners," whatever that means, should be enrolled, to keep her from warping; others, again, recommend a body of experts to keep her straight; others, that she should be French-polished, and adopt Continental methods, and, as Du Maurier would say, a "pooty" surface, to keep her agreeable, and hide her knots; others, again, recommend that at each port there should be appointed a body of persons pecuniarily interested in making money in ships, who, by virtue of a new connection with the "Board," should settle all things, as regards seamen, to their own satisfaction; others, again, suggest that the Board should make rules in such a fashion that everybody could comply with them at no cost, and without any trouble to the inspectors. Truly, a pretty state of things for merchant ships and merchant seamen of Great Britain in 1875.

Very much with the simple mind of the man who suggested that a wall should be pulled down and rebuilt, as the best means of rendering it safe, we would ask whether it is not the best and most straightforward way in this matter of the "Board" of Whitehall Gardens to look the difficulty straight in the face, to admit that for a Marine Department the constitution of the office is inappropriate and radically wrong, and to admit that so long as so many different subjects are jumbled together in one Board, and under one permanent chief, it is only the purely accidental circumstance of a man of unparalleled power being for a few years at the head of it, that has kept, and can possibly keep, it open and working at all? Further, is it not a national blunder, of the worst class, that the very existence of one of the most important offices of this maritime country should depend for its existence on the life, health, and views of a single man? The Royal Commissioners evidently think it is, for their Report shows it.

We have the very greatest admiration for, and will yield to no one in our appreciation of the permanent head of the Board of Trade, the framer and successful administrator of our Mercantile Marine and Survey Laws. We say, that to his ability alone the existence of the office is due, but we do not fear to say that no one man can personally know at the same time everything about the intricacies of law and policy, and the requirements of an iron ship's hull, pumps, and compasses, or a boiler, or a marine steam-engine, or a safety-valve, life assurance accounts and railway management, and that it is the height of unreason for the country to expect that with only a sailor, as a technical officer at the Board to advise him, any one man can personally come to any useful

conclusion whatever on complicated questions submitted by a clever and technical out-door staff. Such questions as those arising out of the cases of the *Chusan*, *Atrato*, and *Mary*, will illustrate this proposition.

In debates in Parliament, and in writings, something has often been said as to the administrative capacity and power of work of an assistant secretary; but those gentlemen who have shown any kindness or consideration for an officer of that position have, we think, in their appreciation of individual exertion, lost sight of the far-weightier matter. A secretary, or an assistant secretary, may, by his own force of will and his intimate knowledge of actual work and real detail, become a useful, and sometimes, unfortunately, a public man; but in the machinery of the State an assistant secretary is in reality a sort of clerk, a step above some of his fellows in one office, and several steps below his fellows in other and more favoured offices. Moreover, as, after taking the very greatest pains, he may be of necessity, and after years of patient study over-ruled at any moment, his responsibilities must theoretically be of the flimsiest.

The present state of things at the Board of Trade is forcing itself on the attention of the thoughtful amongst men with increased weight day by day, and it may be that some independent and patriotic man in Parliament may feel it wise to call the attention of the Legislature to it. Any one who does so will earn the lasting gratitude of those who go down to the sea in ships. The interest of the shipowner and the safety of the seaman alike demand that Britannia's advisers should be sufficiently large-hearted and Conservative to require and provide that her maritime affairs be dealt with by a Bureau or office of proper standing. So long as the Government itself think but little of the office, the outside public will think as little. The interests of Britain's shipowners and seamen, the business of the nation, require something different; they require that Mercantile Marine affairs should not be mixed up in a confused manner, and dealt with in a helter skelter way with gas, railroads, life assurance accounts, the registration of designs for beer bottle labels, the wardenship of the standards, and a variety of matters which, were we to set them out here at length, would appear more like a list of titles of old books at a hurried sale, than a narrative of sober facts, or a list of real subjects.

In concluding our remarks, we wish to place on record our belief, that the work done in the Board of Trade is as well done as is possible, and that the shipowners and seamen of the country would be ungrateful were they not to acknowledge the zeal, ability, and disinterestedness of the permanent staff both indoor and out; or were they to fail to appreciate the high statesmanship and large-heartedness of those right honourable

gentlemen who have from time to time been its political head. Our remarks in no way find fault with a single officer of the Board, and are only called forth by the urgent necessity as shewn by the right honourable member for Bradford, for making adequate and dignified provision for the very great extension and increasing importance of our commercial interests.

SEAWORTHY SAILORS.—PRESENTATION TO THE CREW OF THE “WINDSOR CASTLE.”

MR. DONALD CURRIE told the story of the saving of the *Windsor Castle*. He had thought it right, he said, after the conclusion of his animated recital, to call the attention of the Government to the subject; for an officer's certificate was taken away from him when he did wrong, and it was only proper that some notice should be taken when he did conspicuously right. On Monday he received the news of the arrival of the *Windsor Castle*, together with the decision of Sir Charles Adderley, the President of the Board of Trade; and that day he had received from Sir Charles a note stating that he was detained in town by two deputations. Sir Charles wrote that “nothing would have given him more pleasure than to have contributed by his presence, officially, to do honour to the men who had set so noble an example of cool courage, presence of mind, and discipline, in so terrible an emergency as a fire at sea, especially at a time when so many lamentable disasters had made such an example doubly valuable to the country and its great maritime service.” Mr. Farrer, the Chief Secretary, had also apologised by telegraph; but Mr. Thomas Gray, Assistant Secretary to the Board for the Marine Department, was present—a man, said Mr. Donald Currie, “who worked as hard as any man in England, and who got very little thanks, and much abuse, for doing a duty which consisted in watching for opportunities to find fault, with rare opportunities of giving prizes, as on the present occasion.” Mr. Currie proposed the toast of the Board of Trade, coupled with Mr. Thomas Gray's name, and asked Mr. Gray to make the presentations.

Mr. Thomas Gray, who was very warmly received, then rose, and said: I have to regret that Sir Charles Adderley, the Right Hon. President of the Board of Trade, is not with you to-day; secondly, I have to regret that my learned chief Mr. Farrer, is too unwell to be here, and thus it devolves on me to be their representative. First, I think I will come to my public works, for I think

we should always consider our public duties before our personal feelings. It is my pleasure to come here to-day to represent the department to which I belong, namely, the Marine Department of the Board of Trade, to present to four brave men, in the name of Her Majesty's Government, a very slight token of the appreciation of their gallantry in the case of the fire on board the *Windsor Castle*, at sea, on the 25th October, 1874. (Cheers.) It is unfortunately (as Mr. Currie has pointed out) the very unpleasant duty of the Board of Trade to have to cancel the certificates of masters, mates, and engineers, and otherwise, to make themselves disagreeable, and my Department particularly, often offensive to the shipowners, shipbuilders, engineers, and master mariners of the country. The House of Commons have passed certain laws under which there are forced on the shipbuilders and shipowners of the country, certain regulations as to the build and equipment of ships that are characterised as "motherly," and I often have to be the special instrument in interfering. Now, besides this sort of so-called "motherly" interference, which I myself think is proved often to be an extremely bad thing, the Board have also to reward merit where it ought to be rewarded. (Loud cheers.) I personally, with Mr. Currie, think this is an extremely good thing, and it is one of the pleasantest duties falling to my lot to perform, when I have to come on an occasion like this on board the good ship, of a good shipowner, and present rewards to good officers. (Cheers.) The particular acts for which Mr. Donald Currie truly thinks that the rewards on this occasion should be granted, are acts which the Board regard in the very highest light; of far more importance than the mere rushing into a place suddenly as it were by impulse, and doing some act which is afterwards discovered to be great. The Department do not regard an act of that sort as so important and so necessary in the character of a British sailor as is the pluck necessary for prolonged endurance and determination. In this instance, these four brave fellows worked under the direction of Captain Howson for forty-eight hours. Now, gentlemen, you can appreciate the service they performed if you bring to your mind the physical exertion, the mental agony of working for thirty-six hours to put out a fire on board a ship at sea. Captain Howson had the boats all ready for lowering, and all ready provisioned; and so well did he do his work under these trying and exciting circumstances, that the passengers knew no alarm, for they knew that under the good captain's guidance the boats were ready if wanted, and that they would be got off safely. Think what has been done in the case of the *Windsor Castle*, and then bring to your minds the horrible calamities that have happened through absence of discipline. Here, on the *Windsor Castle*, the work was well done, because the captain was a cool man and the officers were cool men. It is really necessary,

as I have often said before, if we want our ships to be navigated in safety that we should have seaworthy seamen even if we have some unseaworthy ships. Even unseaworthy ships, even ships on fire, can be safely navigated by seaworthy sailors; but the best ships afloat will go down if trusted to unseaworthy sailors. (Cheers.)


Captain Howson, I have to present to you a gold watch and chain of the value of £50—(cheers); I hope you may live long to wear it, and that you will recollect this day, and the day of the fire on board the *Windsor Castle*. I hope, further, your life will be long spared for the credit of the Mercantile Marine, and that Mr. Donald Currie will see his way to placing under your care a certain number of apprentices, who may come forward as our future seamen, and imitate and profit by your grand example. (Cheers.) Mr. Christie, I have to present you with a gold watch and chain, value £40. (Cheers.) The Board of Trade quite understand the part you took in the matter, and they quite appreciate the way in which you assisted the captain in carrying out his orders. They cannot give you a reward of the same pecuniary value as the captain, as it is one of their principles, and a principle I, personally, am very particular in proclaiming, that the captain is himself lord and master, and infallible pope, on board the ship placed under under his command. We do not give you a watch of less value because the Department value your services less, but because they wish it to be understood that the master is the sole responsible man on board a ship. (Cheers.) To you, Mr. Morrison, as chief engineer, I am instructed to present a silver watch and chain, value £30. Of Mr. Morrison, I should like to say a few words especially. It has been a source of great trouble to me, personally, and to the Board of Trade as a Department, to find that there is often an unwholesome rivalry and difference of opinion between the engine-room officers and the deck officers, and that what is called discipline in the engine-room is wanting. The reason why it gives me great pleasure to present this watch to you is that, on the occasion of the fire, you sank all such differences. All the engineering knowledge which you must possess, but which the captain cannot possess, all your special technical information you placed at his service, and obeyed him, using your knowledge to carry out his orders. I wish it to be understood, and I wish you could make sea-going engineers understand that, if they wish to rise as a class, they must learn to obey the captain in all things, and co-operate with him. (Hear, hear.)

For you, William Mackay, the carpenter, there is a silver watch, value £25. (Cheers.) I may say that, in Mackay, we have a man who obeyed orders under the most trying circumstances. He was let down into the hold where the fire was raging, with a rope round him. He was told by the captain to cut a hole in a certain part. The captain

in extremity had to care less for the danger incurred by one man when thinking of the safety of all on board ; that hole had to be cut, and this is the brave man who did it. (Cheers.) He was nearly suffocated five times, and had to be dragged back, as he from time to time became insensible ; but that is a mere incident in the case, which, as a real British seaman, Mackay did not regard as of much importance ; for you will always find that the genuine British seaman, brought up as is this man, cares, when in danger, less about his own life than he cares for anything else. It is that very British pluck and feeling which have made Englishmen what we are, and it is that feeling, as an Englishman, which makes me so disgusted that I can scarcely keep my temper when I think of the advantage often taken of the Plimsoll agitation by unseaworthy seamen. The feeling raised at such conduct is one of disgust ; and worse than that, it has a tendency to compel the Government to undertake a sort of supervision of every ship and every seaman, thereby doing work which shipowners and seamen, if seaworthy, can do so much better for themselves. (Hear, hear.)

Now we come to the smaller part of Mr. Currie's observation, and that is his compliment to myself. It is indeed a pleasure to come down to-day to present these rewards. It is a pleasure to come on board this ship, for we find in Mr. Currie and his line an evidence of the great good of leaving shipowners to do the best for themselves. Here is Mr. Currie's line successfully running in competition with a highly subsidized line. It is true that I do take an interest in my work, and I am very much obliged to Mr. Currie for speaking of me as he has done. I cannot say that I hope he may have another fire on board one of his ships, but I am quite sure that if any such distressing case should again arise, it will be the pleasing duty of someone on behalf of the Board of Trade to meet him again as a model shipowner, and his officers and men as model captains and model seamen. (Cheers.)

ROCKETS AT WORK.—TYNEMOUTH IN A S.E. GALE.

IR,—It is now some months since I, as your representative, have been able to discharge my obligations to yourself and to your readers. It is not that I have had no theme to write upon, but it is that owing to other duties I have been obliged to occupy myself in other ways. I now, with your permission, hope to bring to the attention of your readers the existence of an unobtrusive, but practical, good and efficient institution on the mouth of the Tyne, which in these days of gushing appeals to the sympathetic public and the system of collecting subscriptions by puffing advertisements is lost sight of. I refer to the rocket brigades established on each of the piers at Tynemouth.

In the year 1864, the *Stanley* was wrecked, and that wreck, accompanied by the loss of twenty-four lives, was the means of bringing about two important things ; the first was the enrolment of volunteer life brigades, and the second the system, now fortunately an international one, of known signals of distress at sea. Both these things have been organised by the Marine Department of the Board of Trade.

On Mr. J. Foster Spence, who was Mayor of Tynemouth in the year 1864, fell the duty and the honour of organising the first volunteer life brigade, and on the Board of Trade fell the responsibility of spending the shipowners' money properly ; for in this, as in many things, it is the ship-owner who pays. The brigade house at Tynemouth was very soon followed by one on the south side. The houses belonging to both these brigades are perfect in their way—look-out places, assembling-room, bath-room, surgical appliances and table, beds, galvanic apparatus, clothes-chests, &c., and everything that can be wanted to restore the apparently drowned, or to assist the damaged living. But besides those arrangements and provisions, the Board of Trade have provided guns (32-pounders) outside the rocket brigade house at Tynemouth, for the purpose of rousing the volunteers. The coastguard officers have charge of these guns. When three guns are fired, they mean a ship in dangerous proximity on the south side ; when two guns are fired, they mean the same on the north side. The guns at Tynemouth are repeated by the Naval Reserve ship, *Castor*, which is anchored up the river between North and South Shields, and thus every volunteer has timely notice that his services are wanted.

What I am now about to narrate comes from a visit to the north side of the mouth of the Tyne, where I was staying not very long ago. The occasion I refer to—viz., that of the gale of Saturday night, the 28th, and Sunday, the 29th November—will long be remembered, at the mouth of

the Tyne, as one of great severity. Saturday had been a wet, unpleasant day, but there were no symptoms of the approach of such a furious storm as arose towards Sunday morning. Shortly before midnight three guns from the *Castor* sent forth the signal to the volunteers that their services were required; and, though this signal of *three* guns denotes that a vessel wants assistance at the south side of the Tyne, still, whenever it is heard, the men of the Tynemouth Brigade muster strongly at their watch-house, and there remain on duty so long as the chief officer of coastguard (under whose orders they are) shall think advisable. At the time of the firing of the three guns the weather could not be called very stormy, and it could be seen that the vessel for which we had been roused—a schooner, which proved to be the *Lavinia*, of Guernsey—was lying inside the Fish Pier. For some hours her crew declined to land; but towards morning they were glad to accept the proffered assistance, and leave her, about 5 a.m. in the morning, in the two Percy lifeboats.

About half an hour after the first alarm, as the brigade men were thinking of returning home, a large steamship was observed *making signals of distress* off the end of the North Pier. This appeared likely to offer a job for us. She was so close in that the coastguard, and those best able to judge, said she was ashore amongst the wooden staging, from which the work of constructing the solid stonework of the pier is still being carried on. She was quite stationary, and, as far as could be judged, in a very perilous condition. Two guns were immediately fired, and repeated by the *Castor*. The men, many of whom had started off home, returned at the “double,” for they are all properly drilled. The van in which the rocket apparatus is kept on a railway siding, on the North Pier, was started off as fast as possible towards the ship. In a few minutes, however, the signals of distress disappeared, and on getting to the upper part of the pier, it was found that the vessel was steaming away north. Loud were the ejaculations of these brigade men against the master of this steam-vessel, not because the volunteers objected to be called out, for they all said better twenty false alarms than that one life should be lost; but they objected to this thoughtless creature of a master (who soon turned his ship's head about, and steamed into the harbour), playing the fool with them in the way he had done: all the lifeboats were launched, and a large amount of expense incurred, as the result of his wilful and heartless tomfoolery. He said afterwards “he only wanted a pilot,” and was not in danger. The brigade men—hard-working fellows, who have to get their living by working all day—mostly retired to their homes, not a few of them execrating the thoughtless fool who had wasted the freshest energies of the brigade men by illegally using signals of distress. That man ought to be prosecuted with rigour, and doubtless will not be lost sight of if he ever comes before a court of

law. A few of the brigade men stayed, however, to keep a look-out with the coastguard, as by this time the wind had begun to blow much stronger from S.S.E., and it was evident that a stiff gale was about beginning. This turned out to be correct; before morning dawned a furious gale was raging, and the whole sea was covered with foam, whilst across the entrance to the harbour from pier to pier a very heavy sea was breaking. About eight o'clock a large three-masted vessel, which proved to be the *Lucy Compton*, was observed making for the bars. The seas she encountered were something terrific, and once or twice buried her from end to end; so long was she in rising through them, that the cry was raised that she was gone, but she gallantly fought her way into the harbour: and when it was found afterwards that one of the members of the Tynemouth Brigade was aboard, and was himself lashed to the wheel, helping to steer her, great was the rejoicing that she had not come to grief. From this time till about a quarter to three o'clock, though many ships came in, nothing very particular occurred. Just about that time, however, a small and very trim sloop was observed nearing the harbour mouth. The sea was as strong, or stronger, than ever; but, for the previous half-hour, the wind had lulled—in fact, it had become so calm that any vessel attempting to enter found, just at the critical moment, there was not enough wind to carry her through the roaring sea, which was rolling at the harbour mouth. So, in this case, it was immediately seen that she was in imminent peril. Almost in less time than it takes to tell, she was running into the broken water amongst the rocks behind the North Pier. The signal-guns boomed forth, and away ran the coast-guard and brigade to the rescue, well knowing that, not every minute, but every second, might be the last of everyone on board. As she came round the pier end several very heavy seas broke over her, one smashing in the cabin-light; and then was seen to issue forth a woman, who, in her nightdress, ran up the rigging, as some of the lookers-on said, like a cat. Poor thing! it was but to meet her doom; for but few moments elapsed ere a huge breaker dashed the small craft down on the rocks with such force as to send her and two of the men in the rigging literally flying out of it. She fell into the sea; one man's head was dashed against the taffrail, and over he went into the boiling surf; the other poor fellow fell on to the deck, and it was at once seen that he was much injured. The little vessel came very near to the pier, a life-line was sent on board, and in a few minutes the coastguard and brigade had the pleasure of hauling this poor fellow, whose thigh was shattered, on to the pier. Two more men were still on board, and they were soon rescued. All this was the work of but a few minutes; had it been less quickly performed, no one would have been saved. Promptness and discipline are everything. The gloom which was cast over all present was great when

it was found that the master's wife (Mrs. Smith) and the mate (Mr. Robert Masters) had been lost under their eyes in the surf below. No means could have been used to rescue them. A lifeboat is utterly useless in such a case. The mate, it was supposed, was killed by the blow which he received as he fell from the rigging, the sea being for a time coloured with his blood. Prior, the man whose thigh was broken, was at once carried as gently as possible to the Brigade House, and medical gentlemen called to his aid, by whose kind and gratuitous assistance his injured limb was soon skilfully set, and so soon as they thought it prudent, he was removed by the brigade on a stretcher to the railway, and so on to Newcastle, when they carried him to the infirmary; and all was done that could be for his comfort. In the meantime, the poor captain and the other sailor were stripped, and supplied with dry clothes. The warm bath, and other improvements and appliances, carried out and supplied by the Board of Trade, proved invaluable on this occasion. The bodies of the master's wife and the mate were seen for awhile hurled about by the furious surf behind the pier, and then disappeared, and as yet have not been seen again. Such is the rough sharp nature of the rocks where this wreck occurred, that it was feared they would be almost torn to pieces—and that very soon. The coastguard and brigade continued to keep a look-out in large force. About ninety were present, but gradually the gale, which had risen slightly, again subsided, and so ended a memorable day with this the first life-brigade.

In concluding this notice, there is only one suggestion I have to make, and that is that the Board of Trade should be moved to pay out of the Mercantile Marine Fund, as part of the cost of the rocket service, a very small sum for an enamelled placard to be stuck up in every ship's fore-castle, or in a deck-house, or on the mast, explaining shortly how to use the rocket apparatus. This placard could be furnished by the tonnage measurer, and placed in a good situation to his satisfaction. The cost would, I think, be legitimate as an expense in connection with the apparatus, and it is just this one thing that the Board have neglected. Shipowners will not do it, and some department representing the public ought.

I have the honour to be,

YOUR REPRESENTATIVE.

RESULTS OF EXPERIMENTS TO ASCERTAIN THE TENSILE STRENGTH, &c.

Test No.	Original Ultimate Stress.				Per square inch of Original Area. lbs. tons.	Fractured.				Stress per sq. inch of Fractured Area. lbs.	Extension.		Appearance of Fracture.
	Size.	Area.	Total.	lbs.		Size.	Area.	Difference. Per cent.	Area.		Inch.	Per cent.	
3301 3303 3305 3307	Tested Cold.	1.50 × .36	.540	26,104	48,340	1.40 × .33	.462	.078	14.4	47,794	.62	12.4	Fibrous.
		" × .42	.510	23,936	46,983	1.44 × .32	.461	.049	9.6		.85	7.0	Do., 10 % Crystalline.
		" × .34	.420	18,342	43,671	1.46 × .27	.394	.026	6.1		.30	6.0	Fibrous flaw
		" × .28	.405	13,684	33,787	1.48 × .27	.400	.005	1.2		.12	2.4	Ditto, bad weld.
3302 3304 3306 3308	Tested Hot Blood Red.	1.50 × .36	.540	6,591	12,205	1.30 × .30	.890	.150	27.7	15,990	.91	18.2	Fibrous.
		" × .40	.545	8,252	14,868	1.29 × .30	.887	.168	30.2		.96	19.2	Ditto.
		" × .37	.450	3,654	8,120	1.34 × .26	.848	.102	22.6		.58	11.6	Ditto flaw.
		" × .33	.405	5,569	6,343	1.46 × .26	.880	.025	6.1		.24	4.8	Ditto flaw.
3309 3310 3311 3312	Tested Cold.	1.25 × .43	.537	21,102	39,296	Fibrous 5 per cent. crystalline, flaw.							
		" × .42	.525	21,724	41,379	Do. 5 per cent.							
		" × .44	.550	21,888	39,796	Do. 5 per cent.							
		" × .47	.587	24,272	41,349	Do. 2 per cent.							

All the pieces required to be heated for straightening.

WEATHER IN THE TROPICS.

We extract the following from the work recently published by the Meteorological Committee, and referred to in our last number. We think that the results given, which are the average of a very great number of observations, cannot fail to be of great value to masters of vessels crossing the line, in the square of 10° to which these observations apply. This square extends from 10° north latitude to the equator, and from 20° to 80° west longitude, and has been selected as the space of most importance with regard to which the greatest number of observations have been collected, 60 per cent. out of 125,000 observations extracted from logs of ships, passing through various squares, having been made in this particular square:—

JANUARY.—“The *Outward-bound* ship should pass outside the Cape Verd Islands in January, for although the wind is equally strong inside, she will be in a better position for steering to the southward on the western side of square 3, where there is a stronger north-easterly wind than on the eastern side. The navigator must however bear in mind that he will have a strong westerly current after passing to the southward of 4° N., and must consider the sailing qualities of his ship. On the 25th January, the *Florence Nightingale*, Captain James Gales, had a westerly current of two miles an hour near St. Paul's Rocks. The same ship's log shows that she crossed the equator between 29° and 30° W., and averaged 2° a day to the southward, clearing Cape St. Roque after making two tacks to the eastward one lasting four, the other two hours. She had the wind veering from S.E. by E. to S.E. by S. (true) down to 3° S., whence it averaged about S.E. by E. The swell was north-easterly down to 7° south, with a short south-easterly sea at the same time. In 1° S. she had a quick N.N.E. swell and high short S.S.E. sea causing a very bad confused sea. The current was westerly and averaged about one mile an hour down to 5° S., when it decreased and became more southerly. The weather was unsettled and squally down to 8° S., afterwards fine.”

“The *Homeward-bound* ship should avoid closing with Cape St. Roque, where the winds are lighter than further to the eastward, and she should cross the equator to the westward of 25° W.”

FEBRUARY.—“The *Outward-bound* ship should pass to the westward of the Cape Verd Islands in February, as there are stronger winds on the western sides of square 39 and 3, and although the westerly current is pretty strong near the equator, a true S.E. by E. wind, or one more favourable, may be expected after crossing it, for there will generally be found more winds to the eastward than to the southward of the prevailing

winds. It has already been shown that the winds near Cape St. Roque are stronger than they are further to the eastward, so that it seems to conclude that a fair sailing ship may come to the southward in 26° W., taking the tack which gives the most southing after getting a southerly wind. The ship *Florence Nightingale*, Captain James Gales, crossed the equator about 8 a.m. of the 6th, 1857, in $29^{\circ} 48'$ W. At noon of the 7th she was in $2^{\circ} 24'$ S., $31^{\circ} 8'$ W.; on the 8th, $4^{\circ} 56'$ S., $32^{\circ} 40'$ W.; on the 9th, $7^{\circ} 28'$ S., $38^{\circ} 23'$ W.; on the 10th, $10^{\circ} 1'$ S., $34^{\circ} 5'$ W. The wind was south-easterly and favourable, as shown by the amount of southing made each day; the currents were westerly, but not strong."

"The *Homeward-bound* ship should certainly cross the equator to the westward of 25° W., for, besides experiencing much lighter winds, ships in the eastern part of square 8 meet with a large percentage of north-westerly winds, which are most trying to a homeward-bound ship, for they drive her to the north-eastward into the very light northerly winds which lie on the eastern side of the square."

MARCH.—"The *Outward-bound* ship should pass to the westward of the Cape Verd Islands, and stand to the southward in the western half of square 8, standing boldly on when the wind comes south-easterly, knowing that the wind is generally favourable for getting to the southward in the northern part of square 803. But the navigator must remember that after passing Cape St. Roque the winds are lighter near the land than they are further to the eastward."

"The iron ship *Victoria Nyanza*, Captain A. A. Jones, crossed the equator about 9 p.m. of the 9th of March in $29^{\circ} 46'$ W. At noon of the 10th she was in $1^{\circ} 1'$ S., $29^{\circ} 43'$ W.; on the 11th, in $2^{\circ} 11'$ S., $29^{\circ} 0'$ W.; on the 12th, in $2^{\circ} 39'$ S., $29^{\circ} 4'$ W.; 13th, $3^{\circ} 20'$ S., $28^{\circ} 52'$ W.; 14th, $5^{\circ} 13'$ S., $30^{\circ} 6'$ W.; 15th, $7^{\circ} 40'$ S., $31^{\circ} 50'$ W.; 16th, $10^{\circ} 16'$ S., $32^{\circ} 50'$ W. From 8 p.m. of the 11th to noon of the 13th the wind was light southerly for 10 hours, and then light and variable; from noon of the 13th it was steady, south-easterly. Her currents were slight and westerly, none stronger than 15 miles in 24 hours. This shows that March is not always a favourable month for getting to the southward after crossing the equator."

"The *Homeward-bound* ship should cross the equator somewhere between 26° and 33° W., so as to avoid the north-easterly winds, which are common further to the westward, near Cape St. Roque; and also the light north-westerly winds and calms which abound further to the eastward, on the eastern side of square 8."

APRIL.—"The *Outward-bound* ship should pass to the westward of the Cape Verd Islands, and through the western half of square 8, keeping as much to the eastward as possible after getting the S.E. trade, because in square 803 it is stronger between 30° and 33° W. than between 33° and

35° W.; but keeping clean full, and not fearing to close with Cape St. Roque if driven there, as the prevailing wind is north-easterly between 0° and 5° S. in 33° to 35° W."

"The ship *Oracle*, Captain A. D. Wood, crossed the equator in 30° 24' W., at 9 p.m. of April 5th. On the 6th, noon, she was in 1° 47' S., 31° 33' W.; 7th, 4° 28' S., 36° 6' W.; 8th, 6° 38' S., 34° 9' W.; 9th, 7° 42' S., 34° 2' W., having stood to the eastward for 12 hours with the wind S.E. by E.; 10th, 9° 47' S., 34° 56' W. He remarks at 2 a.m., 'Very light trade, too close in shore. She had had no north-easterly wind.'"

"The *Homeward-bound* ship should keep to the eastward of 33° W., so as to avoid the light north-easterly winds which are common near Cape St. Roque, and she should not cross the equator to the eastward of 25° or 26° W., by which means she will avoid the light north-westerly winds which are so common on the eastern side of square 3."

MAY.—"The *Outward-bound* ship should pass to the westward of the Cape Verd Islands, and stand to the southward, so as to pass the parallel of 4° N. in about 24° W., or even further east, as the winds and no doubt the currents are opposed to her southerly course as she closes with Cape St. Roque. The *Minero*, Captain Carruthers, crossed the equator about 2 p.m. of the 20th in 31° W.; on the 21st she was in 1° 14' S., 32° 4' W.; 22nd, 2° 48' S., 32° 42' W.; 23rd, 3° 5' S., 32° 12' W., having stood to the eastward with a southerly wind for 14 hours; 24th, 4° 55' S., 32° 38' W.; 25th, 6° 21' S., 33° 22' W.; 26th, 6° 44' S., 32° 41' W., having stood to the south-eastward for 14 hours with a south south-westerly and southerly wind; 27th, 8° 4' S., 33° 35' W., having stood to the eastward with a southerly wind for 4 hours; 28th, 9° 39' S., 34° 16' W. The extreme range of her wind was from E. to S.S.W.; it was often very light, and she seems to have suffered by crossing the line so far to the westward. Her currents were westerly, but not very strong."

"The *Homeward-bound* ship should cross the equator in 26° W., or even further west; she will thus avoid the large amount of light north-westerly wind and calm which exists on the eastern side of square 8. Between 5° S. and the equator the winds are stronger in the western than in the eastern part of square 303, which may be an advantage to ships having a very westerly course, but it does not seem worth while to go out of the way to get them."

JUNE.—"The *Outward-bound* ship should pass to the westward of the Cape Verd Islands and stand to the southward in about 26° W. After meeting the southerly wind she should stand boldly to the south-eastward, and not tack so long as she can make southing until she has stood well to the eastward, always bearing in mind that although the prevailing current is easterly down to 4° N., after passing that parallel she will be liable to a very strong westerly current, frequently amounting to 60

miles in the 24 hours, and averaging more than 80 miles between 1° and 2° N. It must also be remembered that as the ship makes southing the wind draws more easterly, so that, with the prevailing wind, it will be almost impossible to make easting without northing after passing to the southward of 5° N. The equator should be crossed as far to the eastward as the above rules will allow, for the outward-bounder gains nothing by closing with Cape St. Roque."

"The iron barque *Panic*, of Liverpool, Captain Blake, crossed the equator about 11 p.m. of the 19th June, in about $29^{\circ} 26'$ W. On the 20th she was in $1^{\circ} 38'$ S., $29^{\circ} 54'$ W.; the 21st $4^{\circ} 27'$ S., $30^{\circ} 38'$ W.; the 22nd, $7^{\circ} 1'$ S., $31^{\circ} 37'$ W.; the 23rd $8^{\circ} 29'$ S., $32^{\circ} 12'$ W.; the 24th $10^{\circ} 6'$ S., $31^{\circ} 34'$ W. The wind was light, but generally favourable between the 22nd and 24th. After the 24th it was very variable in direction and strength, chiefly southerly and sometimes south-westerly. She had not much current, but what she had was westerly. From the equator to 10° S. in $4\frac{1}{2}$ days may be considered a very favourable crossing for a ship so far west in June, still she would probably have done better had she been further east, and she might also have had better winds after the 24th."

"The *Homeward-bound* ship will have slightly stronger winds by keeping to the eastward of 33° W. if she passes through square 803, but there does not seem to be much choice in square 8; perhaps it would be best to pass to the northward so as to be in 26° W. between 6° and 8° N., where she would be likely to pick up a steadier, stronger, and more easterly N.E. trade than if she were further to the eastward, and she is likely to keep light southerly (or fair) winds longer by passing up the eastern side of square 8."

JULY.—"The *Outward-bound* ship should pass to the westward of the Cape Verd Islands, and when the wind draws to S. stand to the south-eastward not fearing the effect of the easterly current, as her captain may feel sure that the wind will draw to the south-eastward as she gets to the southward, and that the current will be very strong to the westward after passing 4° N. When no southing can be made on the starboard tack it will be well to tack to the south-westward, but the parallel of 6° N. should not be passed to the westward of 20° W., and it seems advisable to be several degrees further E. before crossing it, for we have seen that besides the strong westerly current, the winds near Cape St. Roque are very southerly in July, and there is a good deal of sea there."

"The iron ship *Gilbert Thompson*, of Liverpool, Captain Blake, was in $0^{\circ} 26'$ N., $29^{\circ} 59'$ W. on the 18th of July; on the 19th, $1^{\circ} 44'$ S., $31^{\circ} 0'$ W.; on the 20th, $3^{\circ} 33'$ S., $31^{\circ} 22'$ W.; on the 21st, $5^{\circ} 26'$ S., $33^{\circ} 22'$ W.; on the 22nd, $6^{\circ} 51'$ S., $34^{\circ} 17'$ W.; on the 23rd, $7^{\circ} 33'$ S., $34^{\circ} 24'$ W.; on the 24th, $8^{\circ} 16'$ S., $34^{\circ} 36'$ W.; on the 25th, $9^{\circ} 0'$ S.,

84° 48' W.; on the 26th, 10° 37' S., 35° 39' W. She had moderate to fresh south-easterly breezes until the 22nd, when she had heavy squalls from S. to S.E. and constant rain for more than 24 hours, with a short deep sea from E.S.E. After the 22nd, the wind was fresh from S.S.E., drawing to S.E. by S. the latter end of the 24th; on the 25th, the swell was from E. by S., S.E., and S.S.W. Near the equator she had 40 miles of westerly current in 24 hours, but much less or none afterwards. She does not give the 'direction of the ship's head,' or hours of tacking, but it is evident that she must have spent much time on the starboard tack, standing to the eastward. A worse sailing ship would have been much more bothered to the southward of Cape St. Roque, and there is little doubt she would have done better by crossing the equator several degrees further to the eastward."

"The *Homeward-bound* ship will find better winds on the eastern than on the western side of square 3, especially in its northern part. But as square 39 has better winds on its western than on its eastern side it may be well to pass the parallel of 10° N. in about 25° W."

AUGUST.—"The *Outward-bound* ship should pass to the westward of the Cape Verdes, and stand to the south-eastward with the south westerly and southerly winds, not fearing the effect of the easterly current knowing that a westerly one will be experienced to the southward of 4° N., where, the wind being south-easterly, she will have to stand to the south-westward. The equator should if possible be crossed well to the eastward, and it seems that the outward bounder should stand to the south-eastward as long as she can make most southing on the starboard tack. It would be well to be to the eastward of 20° W. before crossing the parallel of 4° N.'

"The iron ship *Conflict*, of London, Captain R. Deas, was in 0° 39' N., 29° 34' W. at noon of the 5th of August; on the 6th in 0° 49' S., 30° 40' W.; on the 7th in 2° 3' S., 30° 45' W.; on the 8th in 5° 6' S., 31° 48' W.; on the 9th in 6° 16' S., 32° 2' W.; on the 10th in 6° 58' S., 31° 55' W.; on the 11th in 8° 38' S., 32° 37' W.; on the 12th in 11° 8' S., 34° 36' W. She had the wind about S.E. (true), force 3 to 4, until noon of the 7th; it was then about S.E. by E., force 5 to 6, until noon of the 8th, when it was again about S.E., force 6 to 7, with a heavy short and broken sea from the south-eastward, and she stood several hours to E.N.E. On the 10th the wind was lighter from the S.E., and sea smoother. The captain remarks, 'Very much annoyed at the wind's hanging so obstinately south. I doubt whether it is the most expeditious way to cross the line so far west; better, in my opinion, to make easting in 3° or 4° N., where at this season the winds are fresh from S. and no current.' After the 10th the wind continued about S.E. 4. Her current was generally westerly, but not very strong. The *Conflict* was a

fast iron ship with a clean bottom, and so managed to beat to the southward between the 8th and 9th against a strong S.E. wind and heavy short broken sea. A dull sailor would have probably lost ground, and unless she had experienced a favourable slant, might have had to go to the northward of the equator, to make more easting, before standing to the southward again. Such a case is not very uncommon."

"The *Homeward-bound* ship should certainly keep to the eastward of 88° W. if obliged to be in square 808 at all, as the winds are decidedly stronger there than nearer Cape St. Roque. In square 3 the southerly winds are slightly stronger on the eastern than on the western side, whilst in square 89 the winds generally are stronger and more easterly on its western side, so that it would probably be well to pass through square 8 so as to be to the westward of 25° W. when passing the parallel of 10° N."

SEPTEMBER.—"The *Outward-bound* ship should pass to the westward of the Cape Verds, and stand to the south-eastward with the south-westerly winds which will be met with in the northern part of square 3; this route will keep him clear of the very light southerly winds between 4° and 8° N. in the western part of square 3; as he progresses to the southward the prevailing wind will become more southerly, which, with easterly current, will carry him fast to the eastward, but it must be remembered that between 0° and 4° N. the prevailing current is westerly and the wind south-easterly so that there the ship will be carried fast to the westward. When most southing can be made on the port tack it should be taken; but the equator should be crossed as far to the eastward as the above rules will allow, and if possible not to the westward of 27° W."

"The iron barque *Hope*, Captain Henderson, was in 0° 10' N., 80° 42' W., on the 8th September; on the 9th in 0° 22' S., 81° 7' W., having stood 8 hours to the eastward; on the 10th in 1° 20' S., 81° 35' W., having stood 8 hours to eastward; on the 11th in 8° 27' S., 82° 25' W.; on the 12th in 5° 12' S., 83° 11' W., having stood to the eastward 2 hours; on the 13th in 7° 3' S., 84° 10' W.; on the 14th in 7° 23' S., 83° 53' W., having stood to the eastward for 12 hours; on the 15th in 8° 26' S., 83° 42' W., having stood to the eastward for 8 hours; on the 16th in 10° 16' S., 84° 17' W. Until noon of the 10th the wind was about S.E. by S., 3 to 4; it then averaged about S.E. $\frac{1}{2}$ E. until noon of the 13th, when it became about S.E. by S. and S.E., force about 4; after the 14th it improved to S.E. and S.E. by E. From the 8th to noon of the 15th she had strong easterly, and especially strong southerly swells which retarded her progress very much; on the 15th the southerly swell had entirely gone. The current averaged from 30 to 15 miles to the westward in 24 hours; the weather was generally fine. On the 9th the captain remarks, 'Beginning to think I have spoilt my passage.' On

the 13th, 'Regrets are useless, but this is a warning; a hard brace heavy head sea; wind persistently southerly, and the remembrance that I might have made as much southing on the eastern as on the western tack if I had continued to the eastward on the 4th and 5th, and should have been in 20° S. by this time.' On the 4th he was in 4° 28' N., 24° 11' W. with the wind S. by W. (true), and tacked to the westward, so that it is probable he was quite correct in his last remark."

"The *Homeward-bound* ship should avoid the light southerly winds by keeping to the eastward of 26° W. when passing through square 3, and as the north-easterly wind is more easterly and stronger on the western than on the eastern side of square 39, especially in its southern part, he should pass from square 3 into the western half of square 39."

OCTOBER.—"The *Outward-bound* ship should certainly pass to the westward of the Cape Verds, and when the southerly wind sets in, stand to the south-eastward until the most southing can be made on the port tack. The prevailing winds show that the S.E. trade is more easterly, and stronger on the western than on the eastern side of square 3, so that she may expect the course and distance to improve as she progresses to the south-westward. After crossing the equator the wind is found to be slightly more easterly, and stronger to the eastward than to the westward of 33° W. The ship *Earl Elgin*, Captain Reed, which had the earthquake near St. Paul's Rocks, crossed the equator on the 20th, in 30° 16' W., with a nice breeze from S.E. by S. (true), drawing more easterly as she made southing; she was in 2° 3' S., 32° 3' W. on the 21st; in 3° 12' S., 31° 45' W. on the 22nd, having stood to the north-eastward for three hours to avoid Fernando Noronha; in 5° 42' S., 32° 37' W. on the 23rd; in 8° 46' S., 32° 36' W. on the 24th; and in 12° 7' S., 32° 26' W. on the 25th. Near the equator the current was about 18 miles to the westward in 24 hours, and became weaker as she made southing. The weather was generally fine and sea comparatively smooth, so that her experience goes to show that a westerly crossing need not be feared by a good ship in October."

"The *Homeward-bound* ship should cross the equator to the westward of 24° W., making a northerly course, she should pass into square 39 to the westward of 25° W., where it has been shown that she will have stronger and more easterly winds than in the eastern half of the square."

NOVEMBER.—"The *Outward-bound* ship should certainly pass to the westward of the Cape Verd Islands, and on meeting the southerly winds, take the tack which gives the most southing. The iron ship *Swarthmore*, Captain Lidbetter, found a strong westerly current near St. Paul's Rocks, at 4 p.m. of the 8th; she was in 1° 31' S. and 30° 42' W. at noon of the 9th; 4° 17' S., 33° 33' W. on the 10th; 7° 8' S., 34° 44' W. on the 11th; 10° 1' S. and 34° 50' W. on the 12th; so that the westerly crossing did not lengthen her

passage. The wind was S.E., drawing more easterly as she got to the southward, and the weather was fine. The westerly current was not so strong after passing 4° S."

"The *Homeward-bound* ship should cross the equator to the westward of 25° W., as the winds of the western halves of square 3 and 89 are the strongest and most favourable, but if she has to pass through square 308 she should endeavour to keep to the eastward of 38° W. until she has passed the parallel of 3° S., by which means she will get stronger winds than if she were nearer the South American coast."

DECEMBER.—"The *Outward-bound* ship should most decidedly pass to the westward of the Cape Verd Islands, and stand boldly to the southward through square 3 in about 25° W., taking the tack which gives the most southing when the southerly wind sets in. The ship *Bowfell*, of Liverpool, Captain Balderston, passed 8 miles to windward of St. Paul's Rocks, at 3 p.m. December 22nd, 1869; she was in $0^{\circ} 39'$ S., $31^{\circ} 16'$ W. on the 23rd; $3^{\circ} 44'$ S., $32^{\circ} 31'$ W. on the 24th; $7^{\circ} 16'$ S., $88^{\circ} 30'$ W. on the 25th; $10^{\circ} 19'$ S., $34^{\circ} 31'$ W. on the 26th. She had a westerly current of about 80 miles in 24 hours near the equator, which became more south-westerly and weaker as she proceeded to the southward. The wind was generally S.E. by E., the wind fine, and sea moderate south-easterly. In square 308 the wind is more easterly (though lighter) near the land than it is between 30° and 38° W., so that a more westerly crossing than that of the *Bowfell* need not be much feared in December."

"The *Homeward-bound* ship should cross the equator to the westward of 25° W. and stand to the northward through the Doldrums, for both squares 3 and 39 have the strongest and most favourable winds in their western halves. If she is driven to pass through square 308 she should keep as much on the eastern side of that square as possible until she has passed the parallel of 2° S., so as to avoid the comparatively light winds which exist near the coast of South America."

SHIPBUILDING, 1874.

SAILING SHIPS.

Ports.	No. of Ships 1874.	No. of Ships 1873.	Gross Tonnage 1874.	Gross Tonnage 1873.
Aberdeen ...	10	9	7,496	8,124
Banff ...	13	8	2,469	1,189
Barrow ...	4	—	2,492	—
Belfast ...	4	—	6,913	—
Bristol ...	7	7	706	1,092
Cowes ...	11	8	592	870
Dartmouth ...	24	30	2,005	2,908
Dundee ...	6	3	4,244	1,123
Faversham ...	9	6	921	490
Glasgow ...	85	17	40,458	18,152
Greenock ...	15	1	13,055	1,859
Grimsby ...	12	16	719	1,051
Hull ...	22	22	2,953	1,318
Jersey ...	13	14	847	1,148
Liverpool ...	25	24	19,126	17,879
London ...	34	12	2,479	564
Lowestoft ...	14	11	580	435
Middlesbro' ...	1	1	1,467	41
Newcastle ...	4	1	2,426	1,766
Plymouth ...	16	12	1,260	1,415
Port Glasgow ...	13	8	15,653	4,843
Portsmouth ...	6	5	691	361
Rochester... ..	7	6	291	298
Rye ...	14	14	698	725
Southampton ...	11	15	697	684
South Shields ...	1	—	1,206	—
Stockton ...	3	1	6,038	28
Sunderland ...	50	30	48,745	18,066
Whitehaven ...	3	3	8,474	1,931
Workington ...	1	—	1,063	—
Yarmouth ...	20	17	1,052	612
Other Ports ...	162	125	18,185	12,178
Total	570	421	205,951	90,585

The result of the foregoing is important. It shows an increase in the number of sailing ships built in 1874 over 1873 to be 149 ships, representing an increase of 115,366 gross tons. The largest sailing ship built during the year was the *Stuart Hahnemann*, of 2,056 tons gross. Looking to the very great increase in the tonnage of sailing ships, there is no room for astonishment at the difficulty of finding sufficient British seamen at the present time, nor at the interest now taken in training boys for the sea service.

SHIPBUILDING, 1874.

STEAMSHIPS.

Ports	No. of Ships 1874.	No. of Ships 1873.	Gross Tonnage 1874.	Gross Tonnage 1873.
Glasgow ...	95	92	135,428	159,538
Greenock ...	13	11	30,419	25,149
Port Glasgow	24	19	17,297	20,256
Sunderland	82	75	38,589	86,676
Newcastle...	54	66	70,026	88,678
North Shields	24	39	9,207	18,000
South Shields	18	13	6,431	7,604
Liverpool ...	26	23	18,578	25,159
Dundee ...	5	9	6,289	10,112
Hartlepool	10	12	11,050	11,547
Aberdeen ...	7	11	4,947	7,272
London ...	16	22	6,469	11,332
Belfast ...	2	1	10,012	2,652
Stockton ...	8	10	11,588	13,380
Kirkcaldy ...	1	2	1,160	2,444
Middlesbro'	15	11	15,658	13,848
Hull ...	12	13	8,634	18,821
Leith ...	2	4	2,576	2,734
Bo'ness ...	1	2	1,344	2,196
Whitehaven	1	2	889	1,894
Barrow ...	9	1	12,551	3,001
Other Ports	27	22	6,973	4,511
Total	402	460	426,065	536,744

The above summary is strictly accurate. The result of the last year's steamship building is very significant, and shows a falling off of 58 steamships, of 110,679 tons, as compared with the steamships built in the year 1873. The largest steamer built in the year 1874 was the *Germanic*, of 5,008 gross tons. She was built at Belfast.

CORRESPONDENCE.

FIRES AT SEA.

To the Editor of the "Nautical Magazine."

DEAR SIR,—Knowing the great interest you take in the Mercantile Marine, I trust a few remarks on fire at sea, and attention to ships' boats, may be of service, especially regarding passenger and emigrant ships.

Fire-Hoses.—Every evening at sea, before sunset, the carpenter, or other responsible person, ought to connect the fire-hoses, not less than two lengths, to all pumps (both portable and fixed); stretch them fair along the deck, clear of all turns, and attach copper branches to each, give a few turns of the pumps, and charge the hoses, to see all in working order, and allow the hoses to remain charged until sunrise.

Fire-Buckets.—These ought to be kept filled, and in their respective places, both by night and day, and on no pretence whatever ought these buckets to be used, except for extinguishing of fire; all of them ought to be fitted with lanyards sufficiently long to reach the sea when the ship is light.

Coal-Hole ought to be properly fitted with an air-shaft.

Boatswains' and Carpenters' Store-Rooms.—No stores, such as oakum, pitch, tar, turpentine, paraffine, paint, or any article of a combustible nature, should be allowed to be carried below the spar-deck. A locker for stores, of a combustible nature, ought to be built on deck, well clear of the galley or donkey-boiler.

Cleaning Boats.—In doing this, which is necessary, at least, once a week to keep all in an efficient state, no gear ought, under any pretence, to be removed from the boat; it is easily suspended overhead by the bight of a rope around each davit head; by its removal to the deck, things are often taken away and mislaid, and the utmost confusion prevails should the boat or gear be wanted during the night, and any article missing. The gear—viz., sail, mast, oars (two spare), rowlocks, secured to the boat; double plugs; two water-breakers, always kept filled with fresh water; this adds but little to the weight of the boat to the davits. Rudder, tiller, and painter, should have most particular attention on all cleaning-out boat days. Also, every evening, before sunset, the falls ought to be faked on the deck, already for lowering; and a globe-lamp lighted, standing in a bucket, close to the boat (or a shaded light) in case such boat should have occasion to leave the ship during the night. The blue lights and rockets should be kept in each boat in a

flannel and canvas covering, for use in time of need, if, for instance, the lamp should go out, and a prospect of the ship losing the boat on a wild dirty night.

Large Boats in Emigrant Ships.—There is no reason why—say, two large pinnaces, boats about 32 feet long, by 8 feet 6 inches wide, should not be carried on skids, just abaft the fore rigging, with davits and all gear complete, sufficiently high, so that when the skids are knocked away from under the boat (which plan can easily be arranged) she may be high enough to swing out clear of the bulwark without the risk of its being necessary to get a number of men together to lift the boat high enough to clear the skids and bulwarks. Should the boats continue for a time to be carried, as many are at present, namely, bottom up, there is no earthly reason why stay and yard tackles should not always be carried aloft, ready to hoist out these boats on any emergency. Some ships it would take hours on a dark, dirty night, to find, get aloft, and arrange tackles to get boats from off the skids; another great objection to the bottom-up system is, the boat's gear is stowed away in most out of the way places, so that, as time rolls on, boats and their gear are neglected and forgotten. If boats are carried on skids they should rest on their bottom, and all their own gear kept in them, and not made receptacles for all wash-deck gear, and the lumber of the deck.

Visiting Rounds.—The standing orders should be, that the chief officer, accompanied by the boatswain and carpenter, should visit all holds (where the cargo is, if possible,) between decks: fore-castle, fore-peak, store-rooms, all boats and fire-gear, pumps, &c., not later than half an hour after sunset, reporting that such has been done by him to the commander, and noting such in the ship's log-book. Such examination and duties is only the work of a few minutes, and adds very materially to the discipline and efficiency of all interested in the well-doing of the ship.

Galley Fires.—These ought to be extinguished not later than 7 p.m., and such noted in the log-book.

I have had nineteen years sea service in the Peninsular and Oriental Steam Navigation Company (holding an extra master's certificate, and also for steam), and resigned to accept a shore appointment. At present I am Acting Marine Superintendent to a large concern.

Trusting some of the foregoing remarks may be of service to you,

I beg to remain, dear Sir,

EXTRA MASTER.

Hull, January 2, 1875.

BANKA STRAIT.

To the Editor of the "Nautical Magazine."

SIR,—I beg to inform you I last year passed the Strait of Banka, under my voyage to and from Singapore, and made some memoranda, which I hereby communicate to you. I passed up through the Stanton Channel in the month of April, and down through the Lucipara in the month of May, and if only a lightship (which, I think, is intended) should be placed in the middle of the Stanton Channel, close by the Melvill Bank, Banka Strait would be the safest and best passage through the archipelago. There is always the advantage of laying down the anchor, if it is wanted, which is not possible in many places of the other straits. In the Admiralty charts are mentioned a lot of beacons and buoys in Banka Strait, which never can be seen, in reality. I saw in the whole strait only one buoy on Fredrik Henriks Rock, in the north entrance, which buoy can be seen only 3 miles off. In the same charts are many conspicuous trees mentioned, which are all, or most of them, gone. On Panjang Hill only is *one* large tree left of three; but this one is a good landmark. Round Lalaric Point should be "white-washed stumps," but are not. The point itself is very sharp, and good for bearing. From N.E. the point looks, at first, as if it were an island.

Coming from the south, through Stanton Channel, the small two Dapur islands are good landmarks. The intended light in Tobo Ali fort is not there yet, and will probably never be. "Single tree," mentioned in the charts, is a good mark, and seen far off; it is, in reality, *two* trees, the one with a very rich crown.

The small Puni Island and Gassong Point, *seen in one*, is a good mark for being clear of the banks. Seen from northerly bearing, this point looks like an island. Pulo Dahun Island cannot be discerned from the Banka Coast. The small Pulu Besar Island gives a good and sharp bearing both from S.E. and E. On Panjang Hill stands a conspicuous single tree, good for landmark. Lalaric Point is very sharp from the south. "Clump of high trees," mentioned in the charts, I could not distinguish. The beacon on Trinbaga rocks, and also the buoy on the bank, were not to be seen in reality. Casuarina Point looks, seen from the north, as if it were a small island. Pulu Pernein, a small rocky island, is a good sharp mark, seen 7 miles off. The Nangka Islands, also, are seen a good while. On the Karang Brom Brom reef there is *no* beacon; also on the Karang Hadjee is *not* any beacon.

The intended lightship on Fredrik Henriks Rock has not been established there. On the points of Sumatra should be some beacons and fishing stakes, but anything of this was not to be seen. The points on the Sumatra side are not so sharp as they are on the Banka, and the

island itself has not any conspicuous hills or peaks as there are on the Banka. The "high tree," mentioned in the charts on Lucipara Island, is not now to be seen there.

Through the whole strait I had a fathom more water than mentioned in the charts.

The *tide* sets very strong round the points, and *in on them*, wherefore the sailor has to be very careful, especially in the dark, to give them a good berth. Between Third and Fourth Point the tide sets strong over to the other side; also, in the mouth of the river Songi Sacugsang, there is a very strong tide setting outward. In both north and south entrances to the Banka Strait is also a very strong tide setting outward.

The only lights in the strait are Kalian and Mintok, both fixed lights, and Lucipara fixed light in the middle of this passage.

Besides this, I beg to inform you the intended light on the island Edam, outside Batavia, is *not* established there, and, although the tower is ready, I do not think it will ever be placed on this island. In rounding St. Nicholas Point, sailors ought to be warned to keep close in shore, as the current is very strong there, and, if the wind falls calm, the ship is liable to be drifted out, as there is no anchorage, and the tide sets strong over to the cliff Button. Every time I have passed the Strait of Sunda, I have seen a lot of fishing lights along the coast; it is not at all dangerous to approach the coast, and these fishing lights are always seen good 3 miles off.

On Java Head, a lighthouse was under building, which will be a great assistance at night time for sailors making Java Head.

I remain, Sir, your obedient servant,

F. G. PETERSEN,

Master of the Finland ship *Equator*, from Jakobstad.

London Dock, January 7th, 1875.

"A.B.'s"

To the Editor of the "Nautical Magazine."

At a time like this, when public attention is being so much called to the disastrous losses at sea, and the defective structure of ships, it appears not out of place to venture a word on the deficient character of the *crews* manning the merchant service, and to offer such remarks and suggestions as seem to many acquainted with the service, to be of importance, not only to the shipping interest but to the whole nation.

In your issue of last month (December) there is an article on "apprentices," which begins with the remark: "A great deal of palaver has been made lately about training-ships and apprentices to the sea service."

Now, while quite admitting the great benefit and use of such training-ships as are at present, and may be hereafter in existence for educating lads for the sea, it is certain that they can only in a degree help to remedy the general evil. The *principle* of manning ships would seem to be at fault in so far at least as regards the *capacity* of seamen. It is a well-known fact, that of the majority of crews manning our eastern-going ships, for example, only about a-half of the A.B.'s are such, properly speaking, and can be relied upon in case of an emergency arising directly after the vessel leaves port; in other words, such as can "hand, reef, and steer," which were supposed at one time to be the qualifications of an A.B. A ship 1,200 tons register has been known to leave Liverpool with a crew of thirty-two, and out of sixteen A.B.'s not more than half-a-dozen could steer the ship properly, and when the mainsail (made of heavy canvas) shook in the wind, the greater part were in such a state of confusion that proper discipline for the time being was out of the question; and afterwards, when fairly out at sea, in fine weather, it was necessary to put the ship in order, only *four* of the whole could be got who were of any assistance in repairing the sails damaged during the heavy weather on the Irish Coast and across the Bay of Biscay; the others being useful mainly in heaving at the winches and pulling the tackles in use to set up the lanyards of the rigging, the *seamanship* work of which had to be done by the officers. Instances like this are not at all unusual.

When we look for the cause of such deficiency in so large a proportion of our sailors, those who have the opportunity of observing, see what happens daily to produce such a state of things. A captain arrives off a long voyage, familiar in a way few landmen can appreciate, with all his men and their various characters, and on being asked what discharge he will give A (who may be a very bad seaman just completing his first voyage, but quiet and bidable), he will in all likelihood answer something to this effect:—"Poor fellow, he is not much of a sailor, and was of very little use at first, but now he is as much weight on a rope as the best of them, so we'll give him V.G., V.G."—that is the best discharge for both character and capacity.

Numberless instances could be cited of men re-shipping with these discharges who are found by their new commanders to be anything but able seamen as they are expected to be. The result of this is, harsh treatment from those in command, and correspondingly dogged and insubordinate behaviour on the part of the incompetent seamen, who, however, gradually get to know quite well that if they keep just within the bounds of duty it is a very hard matter for their masters to prove incapacity, or, at least, is a job few care to take the trouble of proving, should "Jack" get his case taken up by a sea-lawyer (as he is almost

certain to) at the end of the voyage. The remedy for such evils appears to be easy enough to those who are of the opinion that a sailor is (or should be) a skilled labourer, quite as much as say a ship-carpenter or sail-maker, who generally has to serve an apprenticeship for a given time before he is entitled to earn journeyman's wages. The compulsory apprenticeship system being doomed, is it not possible that some other mode less objectionable to master and man could be devised to ensure *servitude* entitling a seaman to rank as an A.B.? There is no reason why a young man of seventeen or eighteen years of age should not be entitled to that rank, but then he should have served at least four years at sea, and be able to show for two-thirds or three-fourths of that time, good-character discharges in his capacity of boy, and O.S. In that case, he would have joined the Service at about the age of thirteen—from that age to seventeen, four years' service as above, should be insisted on. After that age any man of ordinary ability will be able to acquire in three years all the knowledge requisite to constitute a passably good sailor; and with his two-thirds time of good-character certificate, few masters would hesitate to ship him as an A.B.; and ships manned by sailors holding such discharges and passed by the medical officer of the Board of Trade before starting—a precaution many maintain to be necessary—would run fewer chances of getting into the clumsy collisions, &c., which so much startle us at present. W. W.

[We incline to think that it would be an exceedingly good thing for A.B.'s if a rule were made that no man who could not produce evidence of at least four years' service at sea should be legally entitled to recover wages as an A.B.; for the supply being limited, they could get any wages they might ask.—Ed.]

HARASSING SURVEYS.

To the Editor of the "Nautical Magazine."

SIR,—I, in common with many others, feel under obligation to you for publishing the whole Report of the Royal Commissioners on Unseaworthy Ships in your pages. Owing to the way you have arranged it and numbered the paragraphs, your copy has become the best reference yet published. Your article in the December number is also of very great value, because it throws out hints and points for consideration that only some one well-acquainted with the great subject in all its bearings could put before his readers. I need not say to you how valuable we find your articles, as they contain sound common sense spoken in plain words, without any backing and filling, and without any of the heat usually imparted to the subject, by less technical ill-informed writers.

I was very much struck with a point your remarks have brought to light. I refer to that part of the Report in which the Royal Commissioners imply that the surveying of hulls and equipments of ships does not hamper trade, does not increase the cost of navigation, and is advantageous, and does not place on the Government undue responsibility; and where they state that, on the other hand, the surveying of boilers and machinery of ships does hamper trade, does increase the cost of navigation, is not advantageous, and does place on the Government undue responsibility.

Will you allow me to put the four following cases, which have come to my knowledge in London district?

A screw steamer was placed in dock for survey, and it was found that the boss of her propeller was cracked. The owners were about to repair this by fixing on the face of it a circular plate of iron. The Surveyor of the Board of Trade objected to this method, as being about equal in value to a piece of sticking plaster. He had the work done properly.

Another steamer came round here (London) from the Clyde; she was brand new, and being a large steamer she had eight boilers. The gusset stays in every one of the eight steam domes were found by a surveyor of the Board of Trade to be secured by $\frac{5}{8}$ in. bolts in $\frac{3}{4}$ in. holes.

Will you tell me now whether the interference of the Board of Trade did increase the cost of navigation, and did hamper the shipowner, and whether the surveyor's suggestions were advantageous, or whether these two are cases in which, in order to take away grounds of complaints by owners, the surveyors ought not to have interfered.

The above cases relate to machinery.

A third case is one relating to the hull of a ship. She was built at a celebrated yard at Hull; and when six months old came under survey in London. Under the surveyor's direction about 3,800 rivets were renewed in the hull.

A fourth case is also one of interference with the ship. This vessel was built by the same firm; she had made only one voyage to India and back. She was put into dock, and under the surveyor's direction, had about half of the rivets in her keel taken out, the holes were very unfair, and had to be broached and rimmed out before a job could be made of her at all.

Will you tell me that the interference in the third and fourth case did not increase the cost of navigation, did not hamper trade, and was advantageous, and did not throw on the Government undue responsibility, and if everything in the way of interference was wrong in the first two cases, on what principle can it be said to be right in the last two?

Mr. E. J. Reed, C.B., M.P., when addressing his constituents at Milford the other day, stated "that the recent awful losses of ships because of

structural weakness ought to rouse the Board of Trade to a sense of its responsibility in that respect." I quite agree with Mr. Reed, but I also suggest that shipbuilders ought also to participate in the "rousing" he longs for. I am sure that in the case of ships built at the new works about to be started at Milford, he will feel it incumbent to save the Board of Trade every trouble in the matter.

SHIPS' COMPASSES.

To the Editor of the "Nautical Magazine."

SIR,—I am pleased that the object I had in view in giving "a suggestion" on "ships' compasses" has had the desired effect by provoking a discussion of the scheme embodied in a "suggestion," as the end I seek is the welfare of both sailors and ships. In my first letter I purposely abstained from any reference to the earth's effects on compasses, because no amount of supervision can alter these, but may so direct them as to produce useful results. What I condemned, and do condemn (from actual observation), is the supplying of inferior instruments in the shape of compasses, and the improperly placing of good ones when they are supplied; in the latter case giving a large value to A, in the formula referred to by "H. C. W.," and proper inspection here would reduce, if not altogether obviate, the evil practised. Throughout "H. C. W.'s" letter he seems to insinuate there will be no good results from compensation. Does he mean this? "H. C. W." also appears to think that "no shipmaster capable of resolving the magnetism of his ship into its various components will quietly submit to the dictum of a Government inspector." This seems to be at variance with the fact that engineers must, and do submit to periodical inspections from the engineer surveyor; but, waiving this, I should like to ask "H. C. W." how many masters of ships he had met "capable of resolving the magnetism of his ship into its various components?" I can safely assert, in my experience (which is rather a wide one), that I could count those I have met on the digits of one hand. One expression of "H. C. W.'s" is so conclusive that all must endorse it—viz., "Either the present average shipmaster is competent to surmount the difficulties attending the navigation of iron ships or he is not." Now, I contend the "*average shipmaster*" is not competent to judge a good compass, nor whether it be properly placed on board—but there are some bright exceptions—and this being so, I think "a suggestion," if carried out, would protect those who are weak through ignorance. "H. C. W." concludes very prettily; but "has the spirit of free inquiry" been checked in the case of shipmasters? I trow not, but rather stimulated and forced on them by the judicious alteration in the examination by the Board of Trade; and yet, I venture to say, the number is

almost microscopically small who clearly understand the *principles* of compass deviation. In conclusion, allow me to ask "H. C. W." what he proposes whilst "the free spirit of inquiry" is evolving itself? Will he allow ships to still be placed in danger, and men's lives to be jeopardised? If not, what alternative is there to proper inspection?—I am, &c.,

J. M.

DISCIPLINE IN THE ENGINE-ROOM.

To the Editor of the "Nautical Magazine."

SIR,—It is now some time since I gave orders that all the steamers under my control should be supplied with each monthly edition of your valuable journal, with an instruction to the commanders to acquaint themselves with the contents, and recommend the same to their officers and engineers.

I am glad to note by a letter in this month's issue that it finds its way to the engine-rooms of other steamers.

You were good enough, in last October's number, to afford me space to express an opinion on the present state of discipline in merchant steamers, which, whether right or wrong, was prompted by a careful consideration of the question, after twenty years' experience.

My view of the position has been challenged in a moderate and careful manner by your correspondent "Bernard," and with more vigour than accuracy by your correspondent "Cap." May I ask you to insert for me a few lines in reply to both.

I may at once state that my remarks are not meant to apply so much to the regular mail and passenger lines, which, from the great advantages they offer, have drawn to them a superior class of men, both on deck and below, and it is in these vessels that the only vestige of acknowledged discipline remains. I wish to confine myself to the ordinary merchant steamers, and I repeat it would be difficult to find any ordinary steamer where the requisite harmony and confidence exists between the deck and engine-room. Such, at least, is my experience. "Bernard" asserts that this is not the case, and sums up my arguments under two heads. The *first* head I agree to, my contention being that the atmosphere of the engine shop is entirely unfavourable to the teaching of subordination and discipline. The *second* head I demur to altogether. My statement was, that "to the ordinary run of sea-going engineers, discipline is a dead letter," not that all engineers are insubordinate. I am glad to admit that there are very many exceptions.

An engineer is a skilled workman under whose care is placed a valuable portion of the steamer, but he is also an officer charged with the control,

while at work, of a certain number of men, who are generally of the most unruly description, not brought up to the sea, but recruited from almost all sources, and this is where the danger lies. The engineer may be willing and subordinate himself, but he seldom has that knowledge or thorough appreciation of discipline which alone will enable him to keep his men under control. Off duty and in harbour these men are a greater difficulty still, the engineer has but little control over them, and yet both he and his men usually resent what they term the interference of the deck officers, even if exercised merely to keep order and regularity. Hence it comes that the engine-room crew are seldom civil, and generally abusive, when spoken to by the deck officers, and the effect of this example on the rest of the crew is pernicious in the extreme.

"Bernard" thinks that this subject is much larger than I suspect. I can only reply, that if I am not convinced of its magnitude, it is not for want of having the proof of it thrust upon me every day. But a little leaven leaveneth the whole, and I repeat my opinion that the cause I have indicated is the leaven, which, during the last twelve years, has so worked upon the constitution and organization of our merchant service as to gradually bring about a state of things which would be discreditable to the marine of any country, and is much more so to that of the first maritime nation in the world.

Formerly, our vessels were manned by seamen only, and our penal code was sufficient, if properly administered, to maintain discipline; but with the advent of steamers a new element was introduced, a large proportion of the crew being landsmen, placed under the direct control of men whose position on board was undefined and unsatisfactory. A master of great tact and discrimination might manage to combine the discordant elements, but not without, to a certain extent, sinking his position; but the best seaman and navigator might want that tact, and the result would be disorganization.

If engineers were properly brought up to the sea, and learned their duties in the engine-room instead of in the shop, the result would be more satisfactory; they would become accustomed to ship routine, and gradually drop into the position required of them. This can only be brought about by apprenticeship in the engine-room. "Bernard" doubts whether this is feasible; he forgets that the principle is already admitted by the Board of Trade, because *four years' service in the engine-room at sea* is a qualification to undergo examination for certificate, and if other qualifications were discouraged, the matter would soon right itself to some extent.

It is not necessary that a shipmaster should know how to build a ship, neither is it necessary that a sea-going engineer should know how to design and construct an engine. Take an educated lad of sixteen years and

place him as apprentice in the engine-room, he will there learn all that it is necessary or possible to do in the engine-room at sea; he will become practically acquainted with the boiler, both inside and out; the mode of firing it, and working it under steam. In four years he will easily have learnt the duties of a sea-going engineer, and at the same time have become inured to the routine of a sea life, and might safely be trusted in charge as third engineer.

Take another lad, same age, and let him serve four years in a factory, he will have learnt nothing that will be required of him at sea, and may never even have seen a marine boiler under steam, but he will certainly have imbibed Trades' Union theories and ideas, which might or might not be useful to him on shore, but are quite useless to him at sea. He then manages to get shipped off as third engineer in order that he may put in his year's sea service, and pass second-class examination.

I ask "Bernard" which of these two is it safer to trust in charge of machinery and boilers working at high pressure? One is a "driver," the other is a "fitter;" one has been acquainted with the boiler under steam during four years, and the other sees it for the first time when he is placed on board in a responsible position, and yet scores of lads are thrust straight out of fitting shops into steamers as third engineers, to learn their duties at the expense of the shipowner, who must give high wages, and also give his valuable machinery to be practised on. If the true history were written of many a costly accident to brand new marine engines, then even the least practised owners would see that it costs less to bring up an apprentice than to allow a fitter to practise on his machinery until he becomes an engineer.

Some of the best engineers that I have known or employed were men not brought up as engineers on shore, and yet they could develop the full power of their engines, work them safely and economically, and run clear of accidents. What more, I ask, is required in the merchant service as regards efficiency? and yet their shop-bred brethren would call them shovel engineers, or "drivers," and "Bernard" would shrink from trusting them with 80lbs. pressure of steam. What must be his state of mind when travelling by rail, knowing that the locomotive at double that pressure is only in charge of a driver and not a certified mechanic.

As regards our seafaring population, the question of efficiency, its decline, &c., &c., is a large question of itself apart from discipline. I am not dealing with that, and I merely wish to show that the want of harmony between deck and engine-room is a serious matter, and that during twelve years it has had a serious effect upon discipline. I wish to show that the existing state of things can be improved by making the engineer a sailor rather than a mechanic, and that this can be effected without any loss of efficiency. Two apprentices for each 100 horse-power would be no hardship to the

owner, and would bring up a class of men accustomed to the sea and contented with their proper position on board.

The shop-bred mechanic is never contented with his position on board ship, however well paid. In the fitting shop, with hard work, he may earn £6 per month; at sea, as chief engineer, he can earn £20 per month; hence it is plain that whereas his commercial value as a mechanic is £6 per month, he is paid double and treble that sum as engineer, simply to overcome his dislike to a sea life because he has not been brought up to it when young; this, however, verges on another question, and I leave it without further remark.

A few words in reply to your correspondent "Cap.," and, in the first place, I will ask him to read again the clause in my last letter which appears to offend him; by doing so he will see that he is mistaken, and while I admit that "*the law as it stands is sufficient for moderate and sensible men in sailing vessels*," it is not sufficient for moderate and sensible men in steamers, and that I do not ask anything for immoderate and senseless men, as he wishes to make it appear.

Your correspondent next proceeds to give an example which goes far to prove my case. He quotes an incident which he has at second hand. He omits, however, to state the nature of the *defect to bearing*, neither does he state the working pressure of steam, nor the pressure when the master requested the valves to be closed; but, worst of all, he wishes to make it appear that the master ordered the valves not only to be closed, but to be *fastened down*, and he darkly hints at the danger of an explosion. Now, in this case, there is no sudden breakdown of machinery, not even a hot bearing, therefore an experienced engineer would not have stopped his engines suddenly under a full head of steam, but would have eased his fires and worked down the steam before stopping his engines, *for a few hours*, especially with surface condensers, where blowing off steam means salting the boiler. Next he admits that the valves had been open for some time, and as the fires would be damped and the doors open, it is clear that the valves might have been closed with safety, or the master would not have ordered it after looking at the pressure gauge. If the steam rose again the Government-valve alone would be sufficient to relieve the boilers, even with the fires full on, and I take it for granted that the master of an Atlantic passenger steamer never ordered the engineer to prevent the valves acting of themselves as safety valves, even if it were possible for the engineer to do it. Under these circumstances, it was the duty of the engineer to obey orders, and to close the valves, even if he had to draw the fires, and keep a close watch on the gauge; if the valves afterwards lifted through pressure, no master would find fault with him.

Perhaps, however, if we heard the other side of the question, we might find that the weather was bad; the master suddenly finds his engines stop,

he must make sail, and heave his vessel to, but the steam is roaring off in such a manner as to prevent a single order being heard. At any rate, I doubt not that the master had a steam certificate, and knew well what he was about.

"Cap." is evidently a young engineer; he asks what he must do under such circumstances, as he could only disobey orders and go off duty. Let me advise him, when he gets such an order, first to consider under what circumstances it is given, and whether the master who gives it does hold a steam certificate, and may have more experience in marine boilers than himself. Lastly, before choosing the alternative of going off duty, he might ask his *leading fireman* whether there was no other means of easing the boilers without keeping the valves full open.

Finally, may I remind "Cap.," that most people have heads, yet all cannot be captains; that the word captain, on board ship, far from meaning "one with a head," means "the head," whose department must include all other departments on board.

I send you, Mr. Editor, a copy of the regulations in force in my steamers, together with those of many other owners, for the guidance of masters and engineers. They will prove that I have no wish to encourage undue interference on the part of the master, and that I only ask for reasonable powers to enable him to exercise that authority, without which he cannot protect the life and property entrusted to his care.—I am, Sir, yours faithfully,

G. A. L.

[We have now given ample space for the discussion of this question. As regards this last letter, we only have to state that the master of the ship is, both by law and by common sense, supreme on board his ship. He alone is responsible, and therefore he alone must be held responsible. What is wanted is temper, tact, judgment, and mutual forbearance. No sane master would give an order he knows to be wrong, and no sane engineer would obey without question any order which his experience tells him is wrong. But if he thinks an order is not wise, it is his duty to represent the facts courteously and firmly to his superior, and then to do as he is told, without reference to results at all. Madmen, of course, must be treated as madmen, and violent men as incipient madmen, but we do not give our opinion on exceptional cases. Our final remarks are that the master is master of everything and everybody on board, and that to admit that there can be any division of authority would be an act almost amounting to criminality. We would advise our correspondent, "G. A. L.," to read Mr. Gray's admirable, but wholly misunderstood, speech on board the *Windsor Castle*, and to have it reprinted and placarded on board ship.—Ed.]

THE BOARD OF TRADE AND SAFETY-VALVES.

To the Editor of the "Nautical Magazine."

SIR,—It is possible to be too refining, to prefer recondite far-fetched views of a subject to those which stare you in the face.

Such is the case with the writer of the article on safety-valves in the *Nautical Magazine* for January, 1875. He approaches the discussion as if safety-valves were a new invention, and that no stock of knowledge existed on the subject, and attempts to justify the position of the Board of Trade by the result of experiments made by a Committee of the Institution of Engineers and Shipbuilders of Scotland.

I by no means impugn the conclusions of the said committee, but as one who has held for years that the Board's demands were excessive, irrational, and indefensible, except on the ground of "*voluntas pro ratione*," I allege that the conclusions it came to, and the table it furnishes, are not practically relevant to the discussion.

The laws which govern the passage of fluids through any aperture are very obscure. When that aperture is of the nature of an ordinary safety-valve the friction of the particles, or the bends in the current, or some other ill-understood cause produces the result of congestion, so that a valve weighted for a certain pressure retains steam at a greater. This, simple-minded engineers, who only want a safety-valve for the purpose it is made, and not as a test for refined discussion, accept, and only differ as to the amount. A moment's thought will show that the amount may vary according to the factor of safety of the boiler. No absolute canons on the subject exist, but I have heard engineers say that a fair augmentation with a factor of four was 10 per cent., thus making extreme pressure $\cdot 275$ of bursting power.

Preferring always to err on side of safety at sea, I should think that the Board, having taken its stand for structural strength of boilers on a factor of six, might fairly claim such size of valve as would, unassisted, relieve the boiler of all the steam it could produce without reducing said factor below *five*, but this figure is of course open to discussion.

If the Board want to find what that size is they may make experiments at my cost, if only they will guide their regulations by the result, they will thus have an opportunity of proving the sincerity of their newly-found abhorrence to harassing trade.

I cannot part with the article in question for it is evidently written by some one connected with the Board, without asking whether years of experience are to go for nothing, whether we are to-day learning the A B C of engineering, and whether it is reserved for the Board of Trade to inform us that, after accurate and repeated experiment, it has ascertained that cork will swim, and that by formula and calculation the public

may rely on the conclusion that Queen Anne is dead? Are low pressure boilers so far forgotten that the question can be gravely raised to-day whether half-an-inch of safety-valve was sufficient? Did anyone ever hear of its insufficiency? Gentlemen may try experiments and others may reason from them, but do the facts go for nothing?

I would like the writer to answer plainly one or two plain questions—

1. Did he ever in the low pressure days hear any doubt, or even suspicion of a doubt, that half-an-inch was a perfectly safe proportion?
2. If not, would not the safety in these high-pressure days be just as perfect with an area diminished in proportion to increase of pressure?
3. Has intensity of combustion nothing to do with size of safety-valves?

Some boilers will burn five times as much coal per square foot of grate bar as others; will one rule apply to both?

The Board has the power, and of course can insist on any practice its doctrinaire advisers recommend, otherwise it would soon be driven from this and many other positions it has taken. If the rules enforced at sea were applied on land there would be a revolution in a fortnight.—
Your obedient servant,

ALFRED HOLT.

1, India Buildings, Liverpool, January 20th, 1875.

A SILLY BOTTLE TRICK.—The foolish freaks of excursionists are generally subjects for contemptuous anger, but the ultra-foolishness of some dull-brained persons at York seems to us to deserve a whipping. A bottle was thrown by them into the sea at Whitby, containing a tradesman's card, and a dirty piece of paper, having several names written on it in pencil, with the words "Wrecked in sight of shore; all hope given up. April 1, 4 a.m." We would make public the names, only we do not wish to advertise the tradesman, nor to confer on the other foolish people any notoriety whatever. The bottle was, in due course, picked up on the Norwegian coast, and numerous inquiries have been set on foot concerning it. Ultimately it proves to be a hoax, perpetrated by these Yorkshire noodles, and all the anxiety about the matter has turned out to be needlessly expended. The perpetrators of such acts must be so exceedingly silly that the thought occurs, what a pity these useless people could not take the place of some of our seamen who have really been "wrecked in sight of shore." A little experience of the actual danger, if it did not frighten them entirely out of their wits, would, at least, prevent these people from repeating their attempts to play practical jokes in regard to such distressing calamities.

REPORT OF THE LIVERPOOL COMMITTEE OF INQUIRY INTO THE CONDITION OF OUR MERCHANT SEAMEN.

THIS Committee, after several meetings, and giving the subject the most careful consideration, passed the following resolutions on the 20th October, 1874 :—

“After fully considering the final report of the Royal Commission on Unseaworthy Ships, in so far as it relates to apprenticeship and training-ships, and in view of the probable legislation that will follow thereupon in next session of Parliament, it is recommended :—

- “1.—That in any scheme that may be proposed it is undesirable that the present training, industrial, and reformatory school ships be interfered with in any way, except that the State should give such ships pecuniary aid, in the form of a capitation grant, as in the case of public elementary schools.—[This is right, excepting so far as reformatory ships, which, being simply prisons for convicted persons cannot be regarded as proper nurseries for the honourable profession of a seaman.—ED.]
- “2.—That in any legislation care should be taken not to weaken the valuable system of apprenticeship now in operation, but to encourage it. —[Quite sound : and if shipowners will also encourage it by paying reasonable wages it will not languish.—ED.]
- “3.—That training-ships ^{and} nautical schools are absolutely needful for the education of seamen for the Merchant Navy, and that for educating a sufficient number of boys to fill the Royal Naval Reserve, as recommended by the Royal Commission of 1859, Government should establish the requisite number of such ships ^{and} schools in the different seaports of the United Kingdom.—[To help ships established by private effort, and to help them by money specially supplied by the shipowner, is one thing ; to establish ships in order to train skilled labourers to earn money for shipowners, and to charge the cost on the taxpayer, is another, and a different thing.—ED.]
- “4.—That the expense of maintenance of these training-ships should be borne by the Government and by the Mercantile Marine ; and that the proportion of the expense falling upon the Mercantile Marine should be defrayed by an annual tonnage contribution not exceeding 6d. per ton—to be returned to those ships carrying indentured apprentices up to a fixed standard, hereafter to be agreed upon.—[The levying of a tax on the shipowner, or the paying with the shipowner's money for this is right in principle, but the returning of money to ship-owners who carry apprentices is wholly impracticable. They might

carry nothing but indentured apprentices instead of carrying able seamen, or they might indenture all their seamen as apprentices to save the tax. It would necessitate a law as to manning ships.—Ed.]

“5.—All vessels under 100 tons register to be exempt from contribution.—[Good : except steamships. Most sailing ships under 100 tons do carry boys or apprentices.—Ed.]

“6.—That the boys entering such training-ships should be subjected to an examination to ascertain their fitness for the Naval Reserve Service—such boys not to be under (14) nor over (16) years of age.—[Very sound : but they ought also to be a certain size or a certain weight. They must be able to pull their weight of beef at the end of a rope.—Ed.]

“7.—That the boys on entering the training-ships bind themselves—
 (a) To serve in the Royal Naval Reserve for such period and on such terms as the Government may determine.
 (b) To remain in the training-ships for not less than twelve or eighteen months.
 (c) And, further, to serve in British merchant ships for a fixed period of not less than three years.—[Very good : but the wages will have to be adequate, or the binding will give out very soon.—Ed.]

“8.—That the management of these training-ships should be vested in persons to be appointed by the Government and Mercantile Marine ; the ships to be periodically inspected by an officer appointed by the Admiralty.—[Yes : and the Board of Trade. These ships are primarily for the Merchant Service, and the Marine Department, who, under the resolutions, will have to spend the shipowners' money, should certainly inspect.—Ed.]

It is further recommended, in any legislation bearing on the training of seamen—

“9.—That no seaman should be entitled to rate as A.B. unless he can show satisfactory proof of four years' actual sea service.—[This is all very well. It is really perhaps necessary ; but we should like to know whether any shipowner, whose ship may be hereafter detained for the want of one or two A.B.'s, would not be the first to talk about legislative interference.—Ed.]

“10.—That it is extremely desirable that a compulsory benefit fund for seamen be established, and it is suggested that the proceeds of unclaimed wages and effects of deceased seamen should be added to the fund.—[Utterly impossible. In the first place, the days of compulsion are passed. In the second place, the unclaimed “wages and effects” are in pledge for the old compulsory fund, and will remain in pledge for very many years.—Ed.]

"11.—That Government revise our Consular system, and abolish the payment of all fees on the discharge or engagement of seamen in foreign ports ; and that a convention with foreign Governments be asked for, especially with the United States, whereby reciprocal powers may be secured to Consuls, enabling them to prevent the desertion of seamen, and to mitigate the evils that now result from the present state of matters."—[As regards Consular conventions, the recommendation is sound. As regards the non-payment of fees, the British taxpayer may have a different opinion.—Ed.]

We have above given our remarks in a short, crisp way after each recommendation. We have no space to go at length into every recommendation, but our remarks will enable our readers to see both sides of the question. The Liverpool Committee has done good work, and if other ports would do as well, instead of framing vague memorials, expressing cheap sentimentality, or recommending antiquated nostrums, they would be wise. All hail to Liverpool as the first port that boldly agrees to taxing the shipowner for training apprentices: and as regards John Williamson, the Hon. Sec. of the Committee, we only wish that other ports could find a man like him to bring forward the case with judgment, and to mould a discordant mass of opinion into an intelligent report. That Liverpool did not appoint him to a public office he recently sought, is her loss. That he took dudgeon thereat and resigned some other posts he held, is an interesting proof that a wise man may sometimes do an unwise act. We hope to see him to the fore again ; there is plenty for him to do as an earnest worker and a clever administrator.

SPAIN ADOPTS CONSTANTINOPLE TONNAGE RULES.—We learn that the Government of the Spanish Republic have adopted the rules for admeasurement of tonnage, as settled by the late International Commission of Tonnage at Constantinople.

SOUTH AUSTRALIA.—PORT ADELAIDE LIGHTHOUSE.—ST. VINCENT'S GULF.—Referring to a notification from this Department, on the 28th August, 1873, with reference to the proposed substitution of a revolving light for the present white light at the Port Adelaide Lighthouse, it is hereby made known that, from unavoidable causes, the construction of the lens apparatus has been delayed ; but the new light will probably be exhibited on or about the 1st January, 1875.—R. H. FERGUSON, President Marine Board.—Marine Board Offices, Port Adelaide, 19th October, 1874.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
48	NORTH SEA—Schleswig Holstein—Amrum Island	Establishment of a Light.
49	BALTIC—Prussia—Scholpin	Establishment of a Light.
50	ENGLAND—Bristol Channel—Avon River.	Alteration in Channel.
51	ADRIATIC—Pasman Strait—Babac Island	Establishment of a Light.
52	BLACK SEA—Cape Kadosch (Chardak Point)	Establishment of temporary Light.
53	ENGLAND—South Coast—Royal Sovereign Shoals	Intended Exhibition of Light.
54	CALIFORNIA—Hueneme Point	Establishment of a Light.
55	CALIFORNIA—San Francisco—Yerba Buena Island	Establishment of a Fog-Signal.
56	NEWFOUNDLAND—East Coast—Fogo Island—Cann Island	Establishment of a Light.
57	NEWFOUNDLAND—South Coast—Burgee Islands—Boar Island	Establishment of a Light.
58	MALACCA STRAIT—Malacca	Establishment of a Pier Light.
59	JAPAN—Strait of Tsugar—Awomori	Establishment of Harbour Light.
60	NOVA SCOTIA—Isaac Harbour—Holly Point	Establishment of a Light.
61	NOVA SCOTIA—Halifax Harbour	Intended alteration in Buoyage.
62	SOUTH AUSTRALIA—Port Adelaide	Alteration in Light.
63	UNITED STATES—Block Island Sound—Block Island	Establishment of a Light.
64	SCOTLAND—Aberdeen	Alteration in Leading Lights.
65	CALIFORNIA—St. Pedro Bay—Point Fermin	Establishment of a Light.
66	NORTH SEA—Scheveningen	Alteration in Light.
67	JAPAN—Nipon, East Coast—Inuboye Saki	Establishment of a Light.
68	BENGAL BAY—Vizagapatam	Establishment of a Light.
69	NOVA SCOTIA—Bay of Fundy—Cape D'Or	Establishment of a Fog-Signal.
70	FRANCE—West Coast—Raz de Sein—Tevennec Island and Pointe du Raz	Establishment of Light.

NAUTICAL NOTICES.

48.—NORTH SEA.—*Schleswig Holstein*.—*Amrum Island*.—A *flashing* white light, showing a flash of *six seconds'* duration *every twenty seconds*, of the first order, is now exhibited from a lighthouse, recently erected on the large sandhill of Amrum island; it is elevated 207 feet above high water, and should be seen 21 miles. The tower, 137 feet high, is round and of a dark brown colour. Position, lat. 54° 38' N., long. 8° 21' 30" E.

49.—BALTIC.—*Prussia*.—*Scholpin*.—A light of the first order is now exhibited from a lighthouse on the summit of a hill, near the village of

Scholpin. The light is a *fixed* white light, elevated 248 feet above the sea, and should be seen 22 miles. The tower, 66 feet high, is about half a mile from the shore, and nearly 16 miles to the eastward of Stolpemünde. Position, as given, lat. $54^{\circ} 48' 10''$ N., long. $17^{\circ} 14' 50''$ E.

50.—ENGLAND.—*Bristol Channel.—Avon River.*—In consequence of changes at the entrance of the river Avon—viz., the extension of Dumball island to the westward, and of Wharf point to the eastward, the *red* sector of light exhibited from the Avon lighthouse no longer leads through the Avonmouth channel.

51.—ADRIATIC.—*Pasman Strait.—Babac Island.*—A light is now exhibited on the west point of Babac island, Pasman strait, visible between the bearings of S. $\frac{1}{4}$ E., through east and north to N.W. $\frac{1}{4}$ N. The light is a *fixed red* light of the sixth order, elevated 26 feet above the sea, and should be seen 5 miles. The light is suspended from an iron crane on the keeper's dwelling. Position, lat. $43^{\circ} 57' 20''$ N., long. $15^{\circ} 28' 40''$ E.

52.—BLACK SEA.—*Cape Kadoseh.—(Chardak Point.)*—A temporary light is now exhibited on cape Kadoseh (Chardak point,) west point of Touabs bay. The light is a *fixed* white light, elevated 230 feet above the sea, and should be seen 18 miles. Position, lat. $44^{\circ} 6'$ N., long. $39^{\circ} 1' 10''$ E.

53.—ENGLAND.—*South Coast.—Royal Sovereign Shoals.*—With reference to Nautical Notice, No. 154 (September, 1873), on the intended establishment of a light-vessel in the vicinity of the Royal Sovereign shoals, in order more effectually to mark those dangers, and to facilitate the navigation of vessels round Beachy head, further notice has been given that on or about the 20th April, 1875, the light-vessel will be placed in position, and the light exhibited. The light will be a *revolving* white light, showing *three flashes* in quick succession *every minute*; the time occupied by the exhibition of these flashes will be about *twenty-three seconds*, and the interval of obscurity between each successive three flashes will be about *thirty-seven seconds*. The light-vessel will be distinguished in the day-time by a small ball over the usual mast-head ball, and by having *Royal Sovereign* painted on her sides.

54.—CALIFORNIA.—*Hueneme Point.*—A light is now exhibited from a lighthouse recently erected on Hueneme point, Santa Barbara channel. The light is a *fixed and flashing* white light, of the fourth order, showing a *fixed* light for *one minute*, followed by *six* consecutive flashes of *ten seconds'* duration each, elevated 50 feet above high water, and should be seen 12 miles. The tower is 54 feet high, and rises from the keeper's dwelling. It is painted a light buff colour. Position, lat. $34^{\circ} 9'$ N., long. $119^{\circ} 18'$ W.

55.—CALIFORNIA.—*San Francisco*.—*Yerba Buena Island*.—A fog-bell has been established at the south-east end of Yerba Buena island, which in thick or foggy weather will be struck *every ten seconds*.

56.—NEWFOUNDLAND.—*East Coast*.—*Fogo Island*.—*Cann Island*.—A light is now exhibited from a lighthouse on Cann island, entrance of Seldome-come-by bay. The light is a *fixed white* light, consisting of one Argand burner, elevated 85 feet above the sea, and should be seen 12 miles. The tower is a wooden building with keeper's dwelling attached. Position, lat. 49° 35' N., long 54° 10' 30" W.

57.—NEWFOUNDLAND.—*South Coast*.—*Burgeo Islands*.—*Boar Island*.—A light is now exhibited from a lighthouse on Boar island, east end of Burgeo islands. The light is a *fixed red* light, consisting of a single Argand burner, elevated 160 feet above the sea, and should be seen 17 miles. The tower is a wooden building with keeper's dwelling attached. Position, lat. 47° 36' 10" N., long. 57° 35' 10" W.

58.—MALACCA STRAIT.—*Malacca*.—A *red* light is exhibited on the pier head at Malacca. It should be seen 6 miles.

59.—JAPAN.—*Strait of Tsugar*.—*Awomori*.—A *fixed white* harbour light is exhibited from a staff placed about 100 yards from the high water mark, in front of the town of Awomori. The light is elevated 45 feet above the sea, and should be seen 6 miles. Position, lat 40° 51' 45" N., long. 140° 45' 15" E.

60.—NOVA SCOTIA.—*Isaac Harbour*.—*Holly Point*.—A light is now exhibited from a lighthouse recently erected on Holly point, west side of the entrance to Isaac harbour. The light is a *fixed red* light, elevated 80 feet above the sea, and should be seen 9 miles. The tower is a square wooden building, 20 feet high, and painted white. Position, lat. 45° 10' 10" N., long. 61° 39' 20" W.

61.—NOVA SCOTIA.—*Halifax Harbour*.—On or about the 20th April, 1875, or as soon after as the weather will permit, the following alteration will be made in the system of buoyage of the Halifax harbour, viz.: On entering the port from seaward all buoys to be left on the starboard hand will be painted *red*, and all those to be left on the port hand will be painted *black*. Buoys placed on middle ground will be painted either with *red and black horizontal stripes* or *white and black vertical stripes*. The buoys will then be as follows:—Port hand, Black.—S.W. Breaker, iron can buoy with staff and vane; Blind Sisters, iron bell buoy with cage; Litchfield rock, wooden can buoy; Mars rock, ditto; Point Pleasant, ditto; Reed rock, ditto; Belleisle spit, ditto; Leopard, ditto; Commissioners point, ditto. Starboard hand, Red.—Thrum-cap, wooden can buoy; Ives knoll, ditto. Middle ground.—Portuguese shoal, wooden can buoy, red and black horizontal stripes; Rock head shoal, wooden can buoy, black and white vertical stripes with staff and cage.

The following additional buoys will be placed in position about the same time, viz.:—

Bell Rock.—A *black* buoy with *staff and vane*, moored in about 18 fathoms to the south-eastward of Bell rock, off Chebucto head.

Horseshoe Shoal.—A *red* buoy, moored in 6 fathoms on Horseshoe shoal, N. by E. $\frac{1}{4}$ E. $2\frac{1}{4}$ cables from Maugher beach lighthouse.

Dartmouth Spit.—A *red* buoy moored in 8 fathoms off the town of Dartmouth, with Dartmouth Catholic church bearing N.E. by E. $\frac{1}{4}$ E., Black rock point, N.W. $\frac{1}{4}$ N., and eastern tangent of George island S. $\frac{3}{4}$ E. The names of the buoys will be clearly marked on their heads.

62.—SOUTH AUSTRALIA.—**Port Adelaide.**—With reference to Nautical Notice, No. 286 (December, 1873), on an intended alteration to be made in the light at Port Adelaide, further notice has been given that the fixed white light has been replaced by a *revolving* white light.

63.—UNITED STATES.—**Block Island Sound.**—**Block Island.**—A light is now exhibited from a lighthouse on the south-east end of Block island. The light is a *fixed* white light, of the first order, elevated 200 feet above high water, and should be seen 21 miles. The lighthouse, 67 feet high, is built of brick, and attached to the keeper's dwelling. Position, lat. $41^{\circ} 9' N.$, long. $71^{\circ} 38' W.$ The fog-signal is situated 33 yards S.E. of the lighthouse.

64.—SCOTLAND.—**Aberdeen.**—The western or inner light of the leading lights into this port has been moved 22 feet to the northward of its former position, and the bearing of the two lights in line is now W. by S., southerly.

65.—CALIFORNIA.—**St. Pedro Bay.**—**Point Fermin.**—A light is now exhibited from a lighthouse on point Fermin, St. Pedro bay. The light is a *flashing* light, of the fourth order, showing alternate *red* and *white* flashes at intervals of *ten seconds*, each flash being followed by an eclipse, elevated 151 feet above high water, and should be seen 19 miles. The tower, 60 feet high, is square, of a light buff colour, and attached to the keeper's dwelling. Position, lat. $33^{\circ} 42' N.$, long. $118^{\circ} 18' W.$

66.—NORTH SEA.—**Scheveningen.**—The light exhibited from the lighthouse at Scheveningen is discontinued and the building demolished. During the erection of a new lighthouse, a temporary light will be exhibited from the tower of Scheveningen church, which should be seen 10 miles.

67.—JAPAN.—**Nipon, East Coast.**—**Inuboye Saki.**—A light is now exhibited from a lighthouse on Inuboye Saki. The light is a *revolving* white light, of the first order, showing a bright flash once *every half minute*, elevated 168 feet above the sea, and should be seen 19 miles. The lighthouse, 105 feet high, is a circular brick building, painted white. Position, lat. $35^{\circ} 48' 30'' N.$, long. $140^{\circ} 53' 30'' E.$

68.—BENGAL.—*Vizagapatam*.—A temporary light is now exhibited from a small tower on Dolphin's nose hill. The light is a *fixed red* light, of the fourth order, elevated 640 feet above high water, and should be seen 6 miles. Position, lat. $17^{\circ} 41' 45''$ N. long., $88^{\circ} 17' 15''$ E.

69.—NOVA SCOTIA.—*Bay of Fundy*.—*Cape D'Or*.—A steam fog-whistle has been established on the extreme point of Cape D'Or, which, in thick or foggy weather, or snow-storms, will be sounded *twice in each minute*, each blast being of *six seconds'* duration, with intervals of *twenty-four seconds* between each blast.

70.—FRANCE.—*West Coast*.—*Raz de Sein*.—*Tevennec Island and Pointe du Raz*.—From the 15th March, 1875, the following lights will be established for facilitating the navigation of the Raz de Sein :—

Tevennec Island.—A light will be exhibited from a lighthouse on this island, north entrance of the Raz de Sein. The light will be a *flashing* light, showing a flash *every four seconds*. It will appear *white* between the bearings of N. $\frac{1}{4}$ E. and N. by W., or between the rock of Cornoc Bras and La Vieille rocks; *red* from N. by W. to N.W., $\frac{1}{2}$ W., and *white* from N.W. $\frac{2}{3}$ W., through west and south, to E. by S. $\frac{1}{4}$ S., and from the last-named bearing to N. $\frac{1}{4}$ E. it will be obscured. It is elevated 92 feet above high water, and the white light should be seen 13 miles. The lighthouse is a square brick tower, 52 feet high. Position, lat. $48^{\circ} 4' 20''$, long. $4^{\circ} 47' 50''$ W.

Falaise du Raz.—A light will also be exhibited from an iron tower, erected 220 yards from Pointe du Raz lighthouse, in the direction of La Plate rock. The light will be a *fixed white* light having two sectors, one visible between the bearings of east and S.E. $\frac{1}{4}$ E., covering the La Vieille rocks, and the other between the bearings of S. by E. $\frac{3}{4}$ E. and S. by W., or between the Barillets and the dangers off Pointe du Vau. It is elevated 207 feet above high water, and should be seen 10 miles.

Directions.—Vessels passing through the Raz de Sein from the south should get within the white sector of Tevennec light, and keep it in until the Falaise and Pointe du Raz lights are in line, an E.N.E. course will then lead into the red light of Tevennec, and out of the west sector of the Falaise light, and on Falaise light being again seen in the north sector, a north course, or keeping the light in sight will lead clear of all dangers. From the northward, having the Falaise light bearing south, keep it so until the red light of Tevennec is seen, when the course should be altered to W.S.W. until the white light of Tevennec opens out, then proceed south in the sector of white light. Attention must be paid to the currents prevalent in the Raz de Sein, and the channel should not be attempted in bad weather at spring tides when the wind is blowing against the current.

CHARTS, &c., Published by the Hydrographic Office, Admiralty, to the end of January, 1875, and Sold by the Agent, J. D. Potter, 81, Poultry, and 11, King Street, Tower Hill.

No.	Scale.		s.	d.
88	m = 12·4	Spain :—San Sebastian	1	0
677	m = 4·0	Africa, East Coast :—Mchinga Bay (Port Nangwa)	1	6
727	m = 0·8	Fiji Islands :—Savu Savu Bay, Vanua Levu	0	6
185	m = 1·0	Baltic :—Port Swinemünde and Ap- proaches to Stettin	8	0
38	various	Arabian Sea :—Muskat to Kurachi, and plans of Jáshak, Charbár, Gwatar, Gwádár Bays	2	6
316		Plan of Beaujeu Bank and view, St. Lawrence River, have been inserted on this chart.		
75		Plans of Ports Bermeo and Lequeitio, North Coast of Spain, have been inserted on this chart		
1285		Plan of Guanape Islands, Peru, has been inserted on this chart.		

Books.

Admiralty Catalogue of Charts, Plans, Views, and Sailing Directions, &c., 1875	8	0
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The physical influence of the solar forces in exciting life in germs has of late years attracted much attention. M. de Candolle has especially selected as an illustration of this, some observations recently recorded by Prof. Von Heldreich, of Athens, which seem to show that certain seeds may germinate after having lain dormant in the ground for at least fifteen hundred years. A species of *Glaucium*, one of the poppy order, has sprung up in localities which have been covered with a great thickness of old slags from the smelting-works in which the silver ores from the Laurium mines were reduced, these slags being re-worked for sake of the metal which they still retain. It is known that the accumulation of slags cannot be less than fifteen hundred, and may be as much as two thousand years old. The plant appears to be a new species—if, indeed, anything can be called “new” which was known fifteen centuries ago—and has received the distinctive name of *G. Serpieri*. These observations go to prove the correctness of Lavoisier’s statement, that organization and life are directly dependent on light.—*Athenæum*.

OUR OFFICIAL LOG.

MISDEMEANOUR UNDER THE MERCHANT SHIPPING ACT.—By common law a misdemeanor may, where no particular punishment is prescribed by statute, be punished by fine or imprisonment, or both. By section 518 of the Merchant Shipping Act of 1854 a misdemeanor under that Act may be punished by “fine or imprisonment with or without hard labour.” The amount of the fine and the duration of the imprisonment are entirely within the discretion of the judge, but practically we believe the term of imprisonment for a misdemeanor rarely exceeds two years. The high character and limited number of the judges of the superior courts, and the publicity of the trial are a guarantee against extensive or arbitrary punishments. There are two ways of punishing a misdemeanor under the Merchant Shipping Act:—First, by indictment and trial by a jury before a judge, in which cases the judge has, as appears above, an unlimited discretion in awarding the punishment; second, by information laid before a magistrate or two justices, in which case the matter is tried summarily without a jury, but the Court can punish, viz.: by imprisonment not exceeding six months, or by fine not exceeding £100.

SUGGESTIONS TO MASTERS OF EMIGRANT SHIPS RESPECTING BOATS AND FIRE AT SEA.

HAVING in view the fearful consequences which must result from a want of preparation in the event of accident to an emigrant ship, and especially of *fire*, this paper is prepared for the purpose of calling the special attention of the masters and officers of such ships to the precautions necessary to prevent such a calamity, and to means of encountering it should it occur. No scheme or regulations which may be formed beforehand can, of course, supply the place of coolness, judgment, and discipline at the time; nevertheless, the previous establishment of regulations, and the familiarity of the officers and crew with them, cannot but tend to obviate confusion and loss of time when danger arises. It is from the hope of contributing to this end that the following suggestions have been drawn up. The first matter to be settled is the arrangement of the boats.

I.—BOATS.

1. The lifeboats should be carried at the quarters. Every boat should be provided with painter, oars, boat-hooks, pins, plug, rudder, and tiller, all of which are to be properly secured in the boats. All the lifeboats should be fitted with life-lines. The long-boat should have a fitted mast to sail of whatever rig may be preferred.






2. A compass, a means of striking a light, three blue lights, and a breaker of water should be kept ready for emergencies.

3. All the boats should be kept in good order, clear and ready for immediate use.





4. A crew should be assigned to each boat to be under the charge of an officer, or steady person, who should be held responsible for everything being kept at hand and ready for use. The crew of the lifeboats should be picked men. When opportunities occur, it would be very advisable to exercise the men in lowering the boats at sea.

5. In the event of lowering a boat to pick up a man, it will generally happen that the man will be more easily seen from the ship than from the boat. In such a case the following signals from page 811 of the Commercial Code may be useful :—

Signals to Boats.

Recall.	Pull ahead. Go on.	Pull, or go, Astern.	Pull, or go, to Starboard.	Pull, or go to Port.
				

Signals from Boats.

Want assistance, or un- able to execute orders without assistance.	Shall I return? or Direct me what to do.	You are standing into Danger.	Want Immediate As- sistance.
			

These signals from boats to ships to be made with a handkerchief and hat, or bundle, tied to the end of a boat-hook, staff, oar, or stretcher. Any other means likely to attract attention may at the same time be adopted, being careful to use such as will not interfere with or confuse these signals.

If the boat's signals were stamped on canvas and nailed to the boats, they would be found very useful in the event of picking up a man at sea.

6. Should a boat be sent away at night, two lights (a single light may be mistaken for a star) should immediately be hoisted by the ship to show her position, with guns, blue lights, or flashes, as necessary.

II.—TO PREVENT FIRE.

7. No passenger ship should put to sea until all her cargo is properly stowed away, and the decks cleared of any loose straw or hay, or other inflammable material used for packing or other purposes.

8. The passengers should be called on to deliver up whatever lucifer matches, gunpowder, or other inflammable articles they may have about them, and should be warned, not only of the danger to the ship and passengers, but that they will be subject to punishment, under Her Majesty's Orders in Council, for retaining such things in their possession.

9. No naked lights should, on any account, be used in the hold or store rooms, nor in the between decks, except under trustworthy superintendence; nor should any person be allowed to read in bed with a naked light. Smoking between decks should also be strictly prohibited.

10. Spirits should never be opened in the hold, but should be hoisted on deck for that purpose.

11. It is recommended that the fire-engines should be placed under the special charge of one of the principal officers and the carpenter, who should be responsible that, with the buckets, they are kept in a state fit for immediate use. The engine should be worked once or twice a week, to keep it in proper order.

12. As soon as possible after leaving port, the officers and crew should be divided into parties, and assigned to stations, in case of fire, in the same manner as for the boats; possibly the same distribution may answer for both purposes.

III.—ON THE OCCURRENCE OF FIRE.

13. Should a fire break out, the first steps, with a view to arrest its progress as much as possible, must be so to place the ship as to keep the fire to leeward, and to cut off the supply of air by closing the ports, scuttles, hatches, &c., and by smothering the fire with wet blankets, sails, &c.

14. The parties into which the ship's company has been divided should, immediately on the ringing of the fire bell, fall into their respective places. To one party should be assigned the working of the engines; to another the closing the ports, &c., and the preparation of wet clothes for suffocating the fire; to a third the preparations for lowering the boats and provisioning them. Each of these duties will require prompt and clear decision, and each should, therefore, be entrusted to an intelligent and responsible person; and as it might be a great assistance to an officer, when the

emergency arises, to have had the opportunity of considering before-hand the best way of meeting it, it would be desirable that each should from the first be informed of the duty which, in such a case, would be assigned to him.

15. The male passengers should be required to fall into and assist the several parties as the master might direct. This would not only be a material aid, but would help to keep their minds engaged, and to promote the discipline on which the safety of all must to a great extent depend.

16. The females, with children and sick, should remain under the immediate charge of the surgeon, who should endeavour to keep them from being a hindrance to the working parties, and prepare them for immediately leaving the ship, should that step ultimately become necessary. They should secure what warm clothing they could.

17. No one should be permitted to enter the boats, except those in charge of them; nor should any boat be lowered on any pretext whatever, unless by the express orders of the captain. On a strict observance of this rule the safety of the people in the last extremity will depend.

18. If the boats should be insufficient to hold all the people, the master will, of course, take whatever measures may be in his power to construct a raft. A raft may be made of spare spars lashed together in a triangular form, and, to render it more buoyant, the ends should be secured to empty water casks, whose heads should be guarded by hammocks or beds. As a precautionary preparation against such an emergency, some of the largest water casks as soon as emptied should be grommetted round at each end with 8-inch rope, becketted, and tightly bunged, and stowed away in the long boat, and daily wetted, and thus kept ready for use at a moment's notice.

19. Any attempt to get at the spirits or wine on board in moments of danger should be resisted by all hands, and at all hazards.—*Board of Trade Circular*, January, 1878.

GENERAL.

ANGER OF SPONTANEOUS COMBUSTION.—PYROTECHNIC SIGNALS.—
Extract of a letter from the master of a large passenger steamer, dated Bombay, 14th November, 1874:—"According to instructions received at the time, the six cases of company stores, containing pyrotechnic lights (company's signals), were stowed separate from the other cargo, and at hand in case of any emergency; but having heard at Aden that the lights supplied to other ships had caught fire by spontaneous combustion, we had those which were shipped as cargo

in this vessel brought upon deck and stowed on the upper deck fore reserve hatch, and well protected from the sun or damp by three tarpaulins ; yet, notwithstanding these precautions, ignition took place a few minutes after eight o'clock on the morning of the 10th, and in a few seconds the smoke was so dense, and the fumes so stifling, that they were almost unapproachable. In less than a minute the hoses were in full play over them ; yet, even in that time, the tarpaulins were destroyed, the gratings partly so, and some bales of cottons were wetted considerably. The cases, I may inform you, were thrown overboard instantly, and I considered it prudent to retain those supplied for the ship's use no longer." We cannot too strongly recommend owners of ships not to receive any rockets or signals without knowing the makers' names, as well as the dealers, nor without an express warranty printed on them that they are in accordance with the regulations, and do not contain any substance liable to spontaneous combustion, or decomposition. These things should always, even then, be kept in a certified magazine, which should be placed in a secure *deck* house. Reds, stars, or fires, are often specially dangerous.

GREEN (STARBOARD) LIGHT FOR STEAMERS.—This is the light that has given most trouble hitherto. We have noticed in some of the large new steamers, lighthouses have been built on deck to receive the side-lights. We have noticed in others that arrangements are made whereby the side-lights are placed in houses or side cabins specially constructed in the bows or sides of the ships. This is as it should be, for the officer of the watch can at any time, by going into the lighthouse or side cabin, ascertain exactly the state of the light, and it can be trimmed and attended to with as much efficiency and with less trouble than down below. The barbarous practice at present existing of sticking lamps in a flimsy manner on the upper works of steamers or large sailing ships, with mere bits of unsteady boards for screens, must give way to something better, and indeed we are informed that owners of large ships who really study their own interests are fully alive to this point, and in their new specification and contracts are making provision for side cabins for side-lights as a part of the integral structure of the ship. In the case of large steamers there is no reason why coloured glass should be used for the green light, as that light, like the masthead light, can be made by an electric apparatus somewhat similar to, but much smaller than, that in use at the South Foreland lighthouses or the Houses of Parliament at Westminster. The machinery can be driven either by the propelling engine or by a donkey-engine. The white masthead light there is no difficulty about, and we learn that a light of a green colour can be produced by using copper and charcoal points instead of charcoal only. It is quite worth while for scientific and practical men to take this matter

up, because if once a workable constant light itself, of a distinctive colour, can be found, all the trouble incidental to coloured lenses would be avoided. Even while coloured glass must be used the side-lights might be electric instead of oil, and the difficulties of range and uniformity thus overcome.

GLASS FOR ENGINE-ROOM SKYLIGHTS.—The *Salut Public* of Lyons gives an account of some experiments that have lately been made with a view to testing the value of a process, invented by M. de la Bastie, a manufacturer of Bourg, for strengthening glass so as to render it not only hailproof, but also to resist the effects of fire and accidents. These experiments were carried out at the railway station of the Pont d'Ain at the request of the authorities of the railway company, in order to satisfy them of the value of this invention, which naturally would be of the highest importance to them, were it possible to render less liable to breakage the glass roofs, the repairs of which form a serious item in the expenditure of railway companies. A sheet of glass 6 millimetres in thickness, held in a wooden frame, was placed on the floor of the room, and a brass ball weighing 100 grammes was let fall on it from a height which was gradually increased until the glass was broken by the shock. It was found that falling from a height of 24 centimetres the glass was shattered by the ball. A sheet of glass only half the thickness—viz., 3 millimetres—but which had been prepared by the new process, was then placed in the frame, and the same weight was allowed to fall upon it, gradually increasing the height, but without any effect even when dropped from the ceiling of the room. The experiment was next continued out of doors, and it was not until the weight had been dropped from a height of 5.75 centimetres that the plate of glass was broken. Dropped on the ground a sheet of the prepared glass rebounded slightly, and with a sound like that of metal when thrown down. Another experiment was made with a view to test its resistance to fire. A slip of common glass was held in the flame of a lamp, and at the end of twenty-four seconds it snapped in two. The same was repeated with a slip of the prepared glass, but the flame had no effect upon it; and even after plunging the heated glass suddenly into cold water the glass was not broken. The importance of such an invention may easily be imagined, and its application in an endless variety of ways will readily suggest themselves not only to engineers, builders, &c., but to persons engaged in almost every class of trade.—*Society of Arts' Journal*.

THE TRANSFER OF UNSEAWORTHY SHIPS TO FOREIGN FLAGS.—We have reason to believe that a very important step has recently been taken, by both the German and Belgian Governments, with the view of preventing the transfer of unseaworthy vessels, or of vessels respecting whose seaworthiness doubts are entertained, from the British to the German or

Belgian flags. The Ministers of the respective countries have addressed Lord Derby with a view of obtaining the assistance of Her Majesty's Government in carrying this into effect; and have requested that when the Consuls think it desirable, the Surveyors to the Board of Trade may be allowed to survey and certify to the seaworthiness of the vessels applying for transfer, previous to such transfer being effected. We think this is decidedly a step in the right direction, and entertain no doubt but that the Board of Trade and Her Majesty's Government will cordially enter into the proposal, which will greatly assist the Board of Trade in carrying into effect the provisions of the recent Acts for preventing unseaworthy ships from proceeding to sea. At the present time there is reason to fear that numbers of British vessels, whose owners know that their condition is far from satisfactory, are easily put under a foreign flag by a colourable transfer; but should other maritime nations adopt a similar policy to that adopted by the German and Belgian Governments, we shall soon find that owners of British ships prefer keeping their vessels under the British flag, and will doubtless take steps to prevent their being detained under the provisions of the Unseaworthy Act, by placing and keeping them in such a condition that they may proceed to sea without "serious danger to human life."

THE SCHOOL FRIGATE "CONWAY."—It is always a pleasure to us to refer to the good work which is being carried out in the Mersey on board H.M.S. *Conway*, and we are glad to find from the Report read at the Fifteenth Annual Meeting of the Donors and Subscribers that this school-ship continues to maintain its high character as a training-ship for boys intended for officers in the Merchant Navy. During the year embraced by the Report it appears that the average number of pupils was 114, of which number fifty-two have left to join the Merchant Service—very good results, especially considering that, during a portion of the period, the studies of the boys were interrupted by an outbreak of scarlatina, happily not of a virulent type. It is with regret that we learn of the retirement of Mr. James Beazley from the Chairmanship of the Committee of Management of the *Conway*. Mr. Beazley, who since the very first has taken great interest in the work carried on on board the vessel, and indeed was one of the chief promoters of the school, has worked with an energy and zeal worthy of all commendation, and he retires from his post with the best wishes of all connected with the Institution. In Mr. Clarke Aspinall, who succeeds Mr. Beazley as chairman, the committee have secured the services of a gentleman deeply interested in everything connected with Merchant Shipping, and one who will, doubtless, enter upon his duties as a "labour of love," ensuring all the good results arising from work undertaken from such a motive. The prospects of the school appear to be particularly promising. In the autumn the First Lord of

the Admiralty, accompanied by Admiral Sir W. Tarleton and other gentlemen, visited the vessel, and, after expressing themselves highly gratified with everything on board, Mr. Hunt promised, on behalf of Her Majesty's Government, that a larger and more commodious vessel should be provided as a substitute for the *Conway*, when the committee hope to obtain a long-looked-for desideratum in the way of more abundant accommodation for scholastic, domestic, and recreative purposes. The *Conway* continues to be self-supporting, the fees during the year having covered the expenses and left a credit balance of nearly £40. We should perhaps add, that five appointments as midshipmen in the Royal Naval Reserve are competed for annually by the cadets of the *Conway*, in addition to a Queen's Medal, instituted by Her Majesty the Queen, and conferred by the votes of the boys themselves. Great credit is due to all the officers of the ship for the efficient manner in which their duties are performed, and, altogether, the Mercantile Marine Service Association and the donors and subscribers may feel thoroughly satisfied with the results of their fifteen years' exertions, and be assured that their efforts are contributing in a marked degree to the improvement and efficiency of the Merchant Navy of the country.

RECONSTITUTION OF LOCAL MARINE BOARDS.—We have received a pamphlet from Shields, ably written by a gentleman calling himself "Antiphœnax." It contains, amongst many other recommendations, the following, viz.:—"The representatives composing this Local Marine Board might be elected as follows:—Every person holding 100 tons or more of shipping to have one vote; 200 tons, two votes; and so on up to 500 tons; no person to have more than five votes, and all shipowners, whether in foreign or home trades, to vote for the shipowner's representatives. All masters, mates, and engineers holding certificates of competency, or on a ship's register, or articles as such to have one vote. All sailors holding a discharge from service in any vessel belonging to the United Kingdom with the rating of A.B., or one superior to that rate; and all firemen holding discharges from any British vessel, shall have one vote each. A Local Marine Board constituted in the manner above described would be competent to deal with any question which might be brought before it. Its elements containing a representative of every interest which was likely to come within the scope of its investigations; whilst each would feel that they could safely calculate on an impartial hearing, and ultimately a just decision founded on the true merits of the case. As the Boards are now constituted, masters who have to submit to inquiry, either into *conduct* or *cause of disaster* to the ship under their command, feel that in many cases they are not fairly treated; the sympathy of the tribunal before which they are arraigned, being entirely with the shipowner, and

very naturally so, when we remember that the Board consists of ship-owners and the representatives of the Board of Trade." It is not clear, however, that this elaborate proposal would meet the evil, as no sea-going masters, mates, engineers, or seamen could afford to stay at home to attend the meetings of the Local Boards. And as to getting the votes of seafaring men, that is impracticable, considering that they are generally away at sea, and certainly could not come home to attend elections. It will be very much better to send charges of drunkenness and other kindred offences to be dealt with by a police magistrate, who is used to deal with them. Local Marine Boards do not now investigate causes of loss of ships, as the writer of the pamphlet supposes.

THE HAMBURG NAUTICAL SOCIETY.—The annual meeting of this society took place on the 6th January, when all the old officers were re-elected, with the exception of Mr. C. Plath, first correspondent of the society, who declined to offer himself again for the post, and was succeeded by Dr. Kjerulff. The annual report of operation was very favourable. On the question of training-ships, after a general discussion, a special commission was appointed which, contrary to the conclusions of the Nautical Societies of Bremen and Kiel, expressed themselves adverse to the institution of training-ships. The commission considered the creation of the so-called floating-schools as impracticable, and believed that they would in no way afford the advantages expected from them. On the one hand, it would be very difficult to raise the necessary funds; on the other, a large number of those who had been in the ships returned to other employments, or later, deserted, the expense of their training thus being entirely lost, while, for those actually acquired for German ships, the cost was disproportionately raised. The several arguments of the commission against the training-ships will again come before the society in debate, and will be, as we understand, actively combatted by the party in favour of training-ships.

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CIVILIZED CANNIBALS.

THERE is nothing more repulsive to the civilized mind than the eating of human flesh. So repulsive is the idea to us, that it is scarcely credible we should ever be reduced to a state in which such an act should seem preferable to death. Nor is it an exaggeration to say that the idea of even the lowest savages eating one another, is one which is not easily entertained, and that repeated fresh proofs of the practice are required to sustain the public belief in it. It is but a few years ago that the existence of cannibals was disputed, and the "anthropophagi" were thought by some scarcely less apocryphal than "the men whose heads do grow beneath their shoulders." Unfortunately, fresh proofs have not been wanting to this generation, and there is now no doubt that man-eating savages may be found even amongst Her Majesty's subjects. But, looked upon as a savage practice, confined to a few of the most debased tribes of our race, the concomitant of a condition to which there is no likelihood or even possibility of their falling, civilized races have felt it so far removed from their own experience as to be a subject on which they could safely jest, and there are few of us who have not laughed at the King of the Cannibal Islands and Sydney Smith's "cold clergyman on the sideboard."

More rare, but still not unknown, are jests at that most awful strait to which civilized humanity can be reduced, the eating of their kind to preserve life. The fearful description in "Don Juan," unparalleled for its tragic reality and the gleams of cynical humour with which it is relieved, will occur to all, as well as Thackeray's famous ballad of "Little Billee,"

and W. S. Gilbert's yarn of "The Betsey Jane." Though we think that no sufficient excuse, either in a moral or artistic point of view, can be found for the first, we cannot, even with the terrible stories of the *Cospatrick* and the *Eurine* still in our ears, find fault either with the authors who wrote or the public who laughed and will still laugh at the others. But it will be long before a new jest on a like theme will be able to amuse us again. There is a time for all things, and the time for laughing at civilized cannibalism has, alas, gone by for many a day.

It seemed like a thing of the past belonging to days of voyages of discovery and enterprise, as antiquated as pigtailed and nankeen breeches, a myth of the "good old times," which we with our steam lines and tinned meats could look back to and laugh at afar off. As we looked at savage cannibalism down the vista of civilization, so we looked at civilized cannibalism through the vista of years, and in our security could play with one notion as with the other. But this is changed now. Suddenly the horrors which we thought were dead, the ghosts which we hoped were laid, have come again to make us pale and thoughtful.

Such a distaste have we for the literature which shocks without moral or artistic justification that we will not rehearse any part of the terrible stories which have led us to write this article, nor will we allude to any details which are not necessary for our purpose.

But appalling calamities seldom happen without solving some doubts or opening up some lines of investigation beneficial to humanity, and there are certain questions raised by these sad events which we hold it wise to consider.

Within a few weeks we have had four cases reported in the newspapers which, if they had formed the subject of a careful scientific investigation, might, we think, have added to our knowledge on many points connected with this serious subject. First, there was the case of the *Arracan*, in which great suffering was experienced, and many became delirious; they drew lots, and had it not been for the determination of David Webster, the second mate, who was in charge of the boat, one, if not more, would have fallen a sacrifice to the ungovernable appetites of the rest. Secondly, there was the case of the *Eurine*, the worst of all in point of horror, where all drank sea water, and all agreed to draw lots; a victim was chosen, killed, and part eaten. Thirdly, the case of the *Cospatrick*, where all drank sea water, and many died, and the survivors fed on the dead bodies, but no one was killed by his fellow-men. And, lastly, the case of the *La Plata*, where two men on a raft, with part of their bodies immersed in the sea, lived for days and nights in friendly companionship, but felt neither hunger nor thirst of an overpowering kind.

One of the first considerations which suggests itself is how far the

drinking of sea water produces or conduces to that ungovernable hunger which, overriding the strongest feelings of civilized man, will not only impel him to eat his fellow-creature, but even, if necessary, to kill him for the purpose. First of all, we would ask whether there is any instance of cannibalism among civilized beings on shore. There may be, but we never heard of any. Instances of starvation, and starvation in company, on land are, unfortunately, too many. There is no need to search the records of voyages to distant lands, like the Arctic regions or volcanic islands, where the necessities of life are not to be found, or those of the terrible famines in India, Ireland, Persia, and other places, by which whole districts have been depopulated. In the midst of food and plenty, in the heart of the great metropolises of Europe, near our own doors, men die of starvation, sometimes, alas! in groups; but we have never read in any paper of a case of starvation among civilized, or even semi-civilized beings, in which any propensity has been shown to satisfy the cravings of hunger by devouring human flesh. As far as we know, this terrible moral phenomenon is never seen except at sea.

Further than this, we know of no case at sea in which this craving for human flesh has not been preceded by the drinking of salt water. The report of the *Arracan*, only, leaves this point in doubt. We are told that the day after all provisions, including water, were exhausted, the men began to cast lots, but whether any, or all of them, had drunk salt water in the interval, is not stated. This is unfortunate on two grounds: firstly, because we do not know whether the cannibalistic propensities were sequent on drinking salt water; and, secondly, because we do not know whether the person or persons who resisted them successfully had drunk the dangerous draught or not.

In the cases of the *Eurine* and *Cospatrick*, there is no doubt that salt water was drunk by all in large quantities, and in both cases cannibalism took place, though in the latter, supplies of the dreadful food were at hand without recourse to violent means.

In the case of the *La Plata*, salt water was not drunk, and there was no desire for unnatural food.

As far, therefore, as can be judged from these cases, and from the others which we have read of, the facts, though not amounting to proof, point strongly to the conclusion that the state of mind which destroys the repugnance of civilized man to sustaining life by eating his fellow-creatures has never been produced without drinking salt water.

We think that this subject is worthy of the most careful investigation of scientific men. If it could be clearly ascertained, and generally published, that the consequences of drinking salt water would not only be probable madness and death, but also an uncontrollable propensity to feed upon, and, if necessary, to slay their kind, not excluding even those most dear to

them, we think that it would fortify many in the direst state of thirst to resist the craving for salt water. That this can be resisted by many we know, and also that it can be alleviated by bathing, and other means, but there seems to be reason for believing that after the craving has been indulged, the other craving is uncontrollable.

Whether it is absolutely in all cases uncontrollable is another question which it is desirable to ascertain. Nearly all the facts point one way. Nothing is more remarkable than the unanimity with which all, at least, who have drunk salt water, agree to draw lots. What a day or two, or even an hour or two before, appears impossible, suddenly becomes inevitable as fate. One of us must be eaten; which shall it be? is a question which appears to rise almost simultaneously in all minds. Perhaps the question does not arise in so purely savage a form in any mind; it may in one mind be, One of us must die for the sake of the rest, or even, It is expedient or right that a sacrifice should be made; but in all cases the result appears to be the same, and all minds succumb to the necessity of the thing. The *Arracan* is the only case we know where one mind has been strong enough to hold out much longer than the rest, and in this case, as before pointed out, we do not know whether any salt water was drunk or not, or whether the man or men who held out drank any salt water, or as much as the rest.

Without more instances, and more carefully sifted evidence, we cannot decide the question; but there is ground for suspecting not only that salt water is the only known producer of hunger for human flesh in a civilized being, but that when once aroused it is uncontrollable.

It is also a question of some interest whether men possessed by this irresistible craving are to be considered as sane, and what amount of responsibility attaches to their actions.

It is perhaps the most horrible feature in these accounts that the proceedings preliminary to the choice of a victim are usually so deliberate, methodical, and fair. Though some may, in fits of raging madness, fling themselves in the sea, or make terrible assaults on one another, there yet, in many cases, if not all, remains a little miserable band who are sane in all appearance as the committee of a club, and arrange the dreadful election with the same precautions for fairness as though they were about to choose a new member. Nor (and this seems still more sane and even still more horrible from the contrast between the elevation of the feeling and the repulsiveness of the object) does any attempt to act treacherously or any fierce desire to escape condemnation interrupt the orderliness of the ceremony. In the case of the *Fuaine*, a German, who had been delirious from drinking salt water, offered himself as a victim before the election took place, and this was steadily refused by the others, and the lots were drawn. After this was done and the lot had fallen thrice in succession on

an unhappy Italian, the German again offered himself, but on being again refused, he with his own hand cut the Italian's throat. Also the Italian was so unnerved when the lot had fallen on him twice that he refused to draw the third time, but he allowed another to draw for him, and when his deputy drew for him the fatal lot, he gave himself up without a murmur, and would not accept a substitute. Also others, besides the man first mentioned, offered themselves. There is a terrible appearance of sanity about all this.

And yet if it is true that the drinking of salt water is necessary to produce such a state of mind in a civilized being that he will kill another and feed upon him rather than die himself, it is difficult to come to any other conclusion than that they were mad and irresponsible, and if that state of mind is necessarily consequent on the drinking of salt water, the responsibility attaches to the act of drinking and not to that of the slaughter.

But there are many who will hold that they and others in similar cases have acted with complete consciousness and control of all their faculties and feelings and were responsible. The question would then arise morally, as to whether the action was justifiable, legally, whether it was murder, socially, whether the doers should be put upon their trial.

Morally, the question resolves itself into this—Is it justifiable for two or more persons to agree to sacrifice one or more of their lives to save the lives of one or more of the rest? That one should offer himself as a sacrifice for others is, as we all know, the highest example of human love that can be shown, that a man should sacrifice others for himself is the greatest crime we know. That men should agree by common consent that chance shall choose the victim presents a problem that seems equidistant between these two poles, and what man shall judge it? Certainly not those who have done the act under judgment, certainly not those who have never passed through the terrible ordeal which precedes it, and so transcends all ordinary experience or power of imagination and sympathy. Who else are there? None.

Legally, we are not competent to consider the question, but it presents to us a difficulty which we can state. If, as we believe, the law does not recognise the right of a man to take the life of his fellow-creature, except in self-defence, it equally does not allow a man to neglect any opportunity of saving his own. Men, therefore, in the unhappy position of the crew of the boat of the *Furine*, finding that all must die if one were not slain by them, or at least that the sacrifice of one of them was the way in which most lives might be saved, would be placed between conspiracy to commit suicide on the one side and conspiracy to commit murder on the other.

Socially, we have no doubt whatever that nothing but harm could come

of trying the question judicially. No jury or judge could be found competent to try it. No good could come of punishing an act the commission of which is perhaps more terrible than any punishment which could be inflicted, and from which no future prospect of punishment could act as a deterrent; whereas, on the other hand, any legal justification of the act would have a tendency to lessen the natural horror with which all civilized minds regard it.

If the minds of men can be strengthened so as to resist the horrible temptation, or informed so as to lessen the risk of incurring it, it will not be by punishing the doers. The only way of doing the former is by encouraging those who by their fortitude resist, or enable, or compel others to resist it, and a step in this right direction was surely taken by Her Majesty when she granted the most honourable and rare distinction of the Albert Medal to David Webster, of the *Arracan*, who by words and force also, rescued John Horner from the savage hunger of his comrades, and thus ultimately saved both him and those who would have killed him.

As to lessening the risk of incurring this terrible temptation, much, we think, may be done, and at least much should be attempted. If, as we think probable, this temptation is mainly if not entirely due to the drinking of salt water, the ways of alleviating thirst without touching this dangerous fluid are more than ever deserving the attention of all scientific and other men. There is no doubt, we think, that the immersion of the body in salt water, and the drenching of clothes in the same, tends greatly to alleviate thirst; we ourselves have experienced the salutary effect of the former, and others (from the mutiny of the *Bounty* to the recent case of the *La Plata*) bear witness to the same fact.

But we also think that the questions we have specially raised—viz., 1. Whether the drinking of salt water necessarily tends to produce or aggravate the appetite that craves for human flesh? and, 2. Whether this appetite, when once aroused, is ungovernable? are worthy of serious investigation, by the collection and sifting of what records exist of such tragedies as have given rise to this article, and, secondly, by special and searching inquiries directed to these points in any new case that may unfortunately occur.

To repeat what we have stated before: if it be true that civilized cannibalism is the result of drinking salt water, and the necessary inevitable result, and if this, being clearly established, were made widely and generally known, a fear greater to many minds, if not to all, than the prospect of madness and death itself, would be present to men suffering the agonies of thirst at sea, and would help them to resist the terrible temptation of slaking it with a poison as deadly to the mind as to the body.

Other questions of much importance might also be determined, in a measure, by personal experiments, if men could be found devoted enough to make them. It would, for instance, be valuable to establish beyond doubt for how long the human body can resist thirst and hunger, and how far the drinking of salt water, and exposure to the sun, aggravate them. We do not wish or expect that men should endanger their health or their reason, but men who practice the acts of vivisection, and are, by their unusual fortitude of mind and zeal for the human race, able to endure the mental torture of witnessing, and aggravating, if necessary, the sufferings of defenceless animals, will surely be glad of the opportunity of obtaining similar results for similar objects, with no sacrifice except of their own personal comfort.

DISMASTING SHIPS.

[Elsewhere in our pages will be found another article on this subject. We insert both to show the nautical and engineering views of the subject.—ED.]

WE have before us two pamphlets on the Dismasting of Large Iron Sailing Vessels—a subject that is now attracting a great deal of attention—since it appears that eleven out of the twelve cases cited, have occurred within the last twelve months and nine of these were new vessels on their first voyage. The reasons assigned for these disasters are—first, the overloading of the vessels; second, bad stowage; third, vessels over-masted and the masts ill-stayed; fourth, that the masts were not stiff enough at the deck; and fifth, bad material and workmanship. This curious series of disasters is not due to chance only, but we think will be found to be the result of either or all of the following:—Bad stowage, masts built on thoroughly wrong principle and the vessels being possibly slightly overmasted.




From the shipping statistics it will be found that the tendency recently has been to decrease the depth of vessels in proportion to their tonnage and increase the beam—for instance, from three vessels casually picked out, of about 1,000 tons each, built in 1864, we find the mean ratio of depth to beam to be as 1 to 1.69; in 1868, to be as 1 to 1.57; and in 1873, to be as 1 to 1.53. Now supposing all the vessels to have masts of the same height, this will have a particularly important effect upon the strain upon the mast at the deck—the bearing or point of resistance of the masts in the earlier vessels being much nearer to where the power acted than in those vessels of later build—or, in other words, the leverage was less in 1864 than it was in 1873, and the masts being of the same

strength, and possibly longer, it follows that they were less able to bear the strain thrown on them in 1873 than in 1864. We think it almost certain that the place of fracture, in the dismasting cases referred to was at or near the deck, plainly showing that the short nip at the deck being the place of maximum bending moment, was the weak spot. It is not customary, we believe, to wedge masts except in the main deck; the beams are tied around the deck partners to distribute the strain and play left in the upper deck for the mast. The deck partners should be as deep as possible to distribute the strain over a large surface, and thus reduce its local intensity. We almost think the play in the upper deck should be limited to the amount of safe deflexion the mast is capable of bearing at that point, so that when that is reached, additional support may be taken by the mast from the partners in the upper deck which should be fitted and the beams tied as in the main deck.

It is quite possible that one of the main causes of the disasters referred to was bad stowage. It is easy enough to put the cargo into a ship's hold, but it needs an experienced stevedore to stow a ship properly with due regard to the vessel's inherent stability, and the proper distribution of weight to buoyancy. The latter clause being neglected is, in our opinion, the cause of many a mysterious foundering; the cargo being so ill stowed that the vessel in still water is under severe strains, and when she gets into seas that increase the strain one minute and decrease it possibly in another, something carries away. If the ships in which these casualties occurred were excessively stiff, it would tend greatly to bring about dismasting, on account of the rapidity with which the vessel would tend to resume the vertical position, after being heeled over by the wind or sea, thus throwing a great strain on the masts at the deck.

Bad material and workmanship will bring the most perfectly-designed structures to the ground, more especially when, as in the case of the rigging of vessels, the safety of each part depends so much on all the rest. It is much to be feared that very poor iron is sometimes used by the ship-builders, thinking that the possibility of its not being found out is worth the venture. Bad material and workmanship are points on which there is such a wide range of degrees of badness that it would be impossible for us to specify them here. In the best of work there is almost sure to be something wrong—minor items possible—and in the worst of work it is, so to speak, all wrong. Nothing but good tough iron to be allowed and the work thoroughly well looked at and properly checked, are the only means of keeping things straight as we know of. Do you get any advantage by having lofty masts and extending your propelling means in a vertical direction, more than you could by extending it horizontally? No. We think you get more advantage the latter way. In some cases an upper current of air may be an assistance, but the extra

leverage the necessarily lofty sails have, to make the vessel pitch or heel, more than compensates for their slight assistance. The nearer you can get the force opposite to the resistance the greater the economy will be, is an axiom in mechanics which should never be lost sight of. It is with regret, therefore, we see the present tendency to overmast ships so prevalent, but it must work its own cure; in fact, it is doing so now. Some shipowners are buying their experience dear at the present time.

We may put forth the following ideas that have occurred to us in reading these reports. It is to our mind evident that the system of building masts hitherto is defective. No one making a cylindrical beam of the same length as the lower masts of a 1,500-ton ship to bear a transverse line load of the amount the lower masts are subject to, would think of building his beam in a series of short sections and butting the sections, the butts running completely round the beam the same as in masts, as it is plain, without going into calculations, which at present we have not time for, not having the necessary data at hand, each butt is a weak point on account of its riveting, more especially as it has only an internal butt strap. Some masts, it is true have  irons running up the inside, but neither Lloyd's nor the Underwriters' rules make this imperative; by increasing the thickness of the plates slightly and more securely riveting the butts, they may be dispensed with. The  iron stiffeners above referred to are of one length (at least, if they are not they are worse than useless) and are, we assume, jagged over the internal butt straps, thus almost nullifying their value as strengtheners to the mast to resist lateral strain. It must also be remembered that, if there is, in a beam with loose ends, a section weaker than the rest for the load it has to bear, the whole of the beam is weakened to the strength of this weak section, so that if you were to put a mast, constructed as has hitherto been the system, under a transverse strain, with its ends only supported so as to produce the maximum deflection, you would doubtless see it approximately assume a polygonal form, each of the sides of the polygon terminating at the cylindrical riveted seams, and of course it would give way first at the section where the bending moment, for the strength of the section, was greatest. If those were  iron stiffeners the jaggling over the butt straps would give before the straight portion up the cylinder, and so not materially alter the result stated. It appears to us that from the rules laid down for building iron masts, the makers of the rules intended that the lower masts should be called upon to resist a vertical pressure only, wholly forgetting the words of the old song—Allan Cunningham, I believe—

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It is the want of elasticity in the masts that is the root of all the evil. If they were so constructed as to be capable of resisting safely a certain amount of deflection, the same as a beam of their length and diameter, dismasting, under ordinary circumstances, would, probably, be unknown. As to the best method of constructing masts, with the requisite amount of elasticity, we are scarcely prepared to say much, not having had time to give the subject the consideration it deserves; but the way we would think the best, would be to build them as follows: get some long bars of **H** iron, and fasten one of the flanges of each bar—and there should not be less than six bars in each mast—to **I** iron hoops, the number to be afterwards determined, the outside diameter of each hoop being twice the depth of the **H** iron, plus twice the thickness of the mast plating; less than the outside diameter of the mast, at the position where the hoops are placed. Diagonal bracing could then be put in from side to side of the mast secured to the **H** iron stiffeners. After the mast is formed in skeleton, resembling somewhat a skeleton telegraph post, put up the outside flanges of the **H** iron stiffeners strips of iron plating, just wide enough to reach half across the flange of each iron stiffener to which they will be riveted. These plates should, of course, break joint properly, if they cannot be got the whole length of the lower mast. The whole of the mast can be securely rivoted, excepting one plate, which should be bolted to the flange of the **H** iron, instead of being riveted, so that it can be removed for painting the inside of the mast when in for an overhaul; this is a very important feature in the proposed method, as the internal diagonal bracing, and the extra space taken up inside the mast by the **H** irons main stiffeners and **I** iron hoops, will prevent anyone getting down the mast to examine and paint it; for all these iron tubular structures should be so constructed as to allow of their internal parts being seen and painted periodically. If not so constructed, they, in a few years, get dangerous. It may, perhaps, be urged that masts so constructed would be exceptionally heavy; but, although they may possibly be as heavy, they would not be heavier than the present defective ones, as the outside plating might, with advantage, be materially reduced in thickness, its main object being to make the mast cylindrical outside, and keep the water out, and instead of having a mast that could not be depended upon, you would have one of known strength. It is impossible to say what number of lower masts, built on the method hitherto adopted, have been strained to within an inch of their lives, but certainly they are not a few; their not having actually broken is no criterion that they are strong enough. To show signs of breaking is almost, to a dead certainty, to mean being dismasted altogether.

We have said nothing about the strength and spring of the lower rigging in modern ships, as, although it is a most important means of

support to the mast, more especially at the present time, it is defective in this way : the shrouds being capable of lengthening as the strain comes on them, and the mast being so built that very little deflection will break them, the shrouds may be perfectly strong enough, and yet the vessel get dismasted. If the masts were capable of standing reasonable deflection, the strain, notwithstanding the lengthening of the shroud, would possibly come on the shrouds in time to avoid anything serious happening. So that, at present, we think the masts are the most defective, and so have confined our few remarks to them.

THE COD FISHERIES OF NORWAY.

THE fisheries contribute mainly to the support of the inhabitants of the seaboard of Norway from the Naze to the very entrance of the White Sea, not only as an article of food, but as a staple article of export, by means of which other necessaries of life are procured. The official returns published by the Norwegian Government being now complete, Consul-General Crowe is enabled to render a more correct report than he has hitherto had the means of doing. There are three chief divisions, viz. :—The Lofoden, Romsdal, and Finmark. The Lofoden cod fishery is carried on around the extensive group of islands known under the name of the Lofoden Islands. Neither the Romsdal nor Finmark fisheries can be counted upon with the same degree of certainty as the fisheries around these islands, and in the waters they enclose. Here the experience of centuries has established the fact, that the fish annually seek these sheltered waters in immense shoals for the purpose of spawning, there being several extensive banks between this outer fringe of islands and the mainland, on which the fish congregate, and where the bulk of the fish are caught. The appliances used for this purpose are nets, twenty fathoms in length and from eight to ten feet in depth, seines and lines. Nets and seines, however, are the gear most generally used. The nets are let down in the evening and hauled up in the morning. At a given signal, the firing of a cannon, the fishermen all start off to the banks to haul up their nets ; no one being allowed to go before the signal is given. The lines, on the other hand, are set in the daytime. About 100 lines with baited hooks, are attached to a floating line of about 100 fathoms in length, supported on the surface by glass buoys. The catch for 1873 exceeded the average of the last ten years, and as prices averaged about $6\frac{1}{2}$ species-dalers (4s. 5½d.) per 100, the earnings of the fishermen were greater than usual, although the number

of men engaged in the fishery, among whom the proceeds had to be divided, likewise exceeded that of previous years.

The greatest haul of a six-manned net boat amounted to 20,000 fish, yielding 55 barrels of liver, and 35 barrels of roes, which at the then current price, made each man's earnings 340 species-dalers, equal to £76. The total catch has been calculated at 22,250,000 of fish, yielding 81,000 barrels of roe and 59,000 barrels of liver. The price of the fish averaged $6\frac{1}{2}$ species-dalers per 100; the price of a barrel of cod roes, 8 species-dalers, and that of a barrel of liver, 6 species-dalers. Twelve millions of fish were cured and prepared as clipfish (baccau) equal to upwards of 18,000 tons; 8,000,000 as dried, unsalted, round, and split fish; 1,500,000 salted in barrels; 750,000 for consumption in the district. Four hundred and seventy barrels of medicinal cod liver oil were prepared. The money value of the catch was estimated at upwards of 1,800,000 species-dalers, fully equal to £400,000 sterling. There were 4,275 boats engaged, manned by 17,262 fishermen, besides the people employed on shore, curing and preparing the fish for the markets. The greatest number of vessels assembled on the fishing grounds at any one time for the purchase of the fish, is stated to have been 390, manned by 1,690 men. The size and quality of the fish taken appears to have been regular and good. Sixty to 68 fish went to the hundred weight of stock-fish; 280 to 300 to the hundred weight of clipfish; and 390 to 400 livers to a barrel of oil. The Government inspectors were, as usual, on the fishing grounds from the first week in January to the middle of April, with extensive magisterial and police authority to treat summarily all disputes and offences among the fishermen during the fishing season.

The Romsdal fishery includes the district of Sona and Nordmore, as well as Namdal. The aggregate catch on this range of coast amount to 6,656,000 codfish, which, with 22,259 barrels of liver and 14,087 barrels of roe, was valued at 715,236 species-dalers. The number of men and boats engaged is not given, consequently, the exact earnings of each man cannot be ascertained; the result, however, is presumed to have been satisfactory. These fisheries commence and close about the same time as the Lofoden, the fish seeking the shelter of the coast and numerous islands here for the same purpose.

The last of the cod fisheries, and not the least, is that of Finmark, which usually commences at the large island of Soroin and the channel leading into Hammerfest, about the latter end of March, the time the fish leave the Lofoden district, gradually extending from thence round the North Cape, to the entrance of the White Sea, penetrating occasionally into the latter, along the Russian shores. This fishery lasts for two or three of the summer months. It is as often called the *codde* (capelin) fishery as the cod fishery, as the arrival of the cod is always preceded by

the appearance of shoals of the capelin, frequently in such numbers as to be taken along the beach in buckets; they are not used by the fishermen as food, but simply as bait for their long and deep sea lines. So certain are the fishermen of the cod following in their wake, that at their first appearance on the coast, the telegraph wires are immediately set to work communicating the information far and near, which is promptly responded to by the appearance of the fishermen in the localities indicated. This fishery, like that of the Lofoden, was unusually productive, exceeding, in fact, the catch of any former year since 1868. It amounted to 16,200,000 cod, yielding 42,047 barrels of liver, valued at about 1,000,000 species-dalers. Two thousand and ten barrels of medicinal cod liver oil were obtained from the livers. No roes are ever found in the fish caught here, as they probably are the remnant of the shoals that have spawned around the Lofoden islands before proceeding northwards in the track of the codde, upon which they evidently feed, as those small fish are frequently found in their stomachs. The number of men engaged in the fishery is stated at 16,800, employing 4,700 boats; from 350 to 400 vessels were on the fishing grounds to purchase the fish. Owing to the additional distance these vessels have to sail, the price paid for the fish and liver is necessarily less than that which the fishermen of Lofoden obtain, the difference in price being considered as freight, the distance from their homes being double. The earnings on the whole, however, are not usually less than what is earned by the men at the Lofoden fishery, as a brisk bartering trade is carried on between the Finmark fishermen and the numerous Russian craft that annually come to these fishing grounds from the White Sea, for the purchase of the fish, by which trade both the buyer and seller are gainers.

The Russian buys the raw fish from the fishermen, paying for them in meal, flour, lines, and other useful articles; thus they are both mutually served. As no money passes between them, no correct estimate of their profits can, with any degree of accuracy, be made. The fish thus purchased does not consist solely of the cod, but largely of the halibut, pollock or cole fish, which the Russians salt in bulk in their vessels. When full, they proceed at once to Archangel and minor ports in the White Sea. This traffic is encouraged by both the Russian and Norwegian authorities.

THE CONNECTION BETWEEN CASUALTIES TO SHIPS AND EXPLOSIONS IN MINES.

IN the number of the *Nautical Magazine* for the month of August, 1872, an article appeared, based on a report by Messrs. Scott and Galloway, which endeavoured to show that a connection existed between the causes of many of the casualties to ships and the explosions in coal mines, and that in many instances both classes of accidents were due to meteorological disturbances. Since that date, Messrs. Scott and Galloway have published two reports on this subject, showing the number of explosions in coal mines during the years 1871 and 1872, with, as far as possible, the causes of such explosions. These reports confirm, in a remarkable degree, the statements then advanced, and tend to show that a system of warnings, as to the state of the barometer and thermometer, would, in all probability, if carefully noted and acted upon, be the means of preventing many of the sad calamities which only too frequently occur in the mining districts. The reports now before us are more complete than the one upon which we commented in 1872, and as the Inspectors of Collieries have, without exception, in the later report, furnished statistics of the accidents reported in their respective districts, the facts recorded may be relied upon, the element of averages being, in the Report for 1872, almost entirely wanting. It appears that in the year 1871, the total number of explosions amounted to 207, of which 113, or 55 per cent., are attributable to the fall of the barometer, or atmospherical pressure, 39, or 19 per cent., to the rise of the thermometer, or excessive heat of the weather, while 55, or 26 per cent., are not attributable to meteorological disturbances. In 1872, we have a total of 238 explosions, of which 135, or 58 per cent., are considered to be attributable to a falling barometer, 39, or 17 per cent., to a rising thermometer, and 59, or 25 per cent., not attributable to meteorological disturbances. From these figures there appears to us to be no reasonable grounds for doubting that the existence of meteorological agencies has certainly considerable effect upon the gases in the mines, and that at times, when meteorological disturbances are great, it behoves all concerned in the working of mines to take especial precautions for the prevention of explosions.

Each of the reports is accompanied by a diagram, giving the barometrical and thermometrical curves for the year, plotted from the continuous records at Stonyhurst Observatory, and there is every reason for believing that the instrumental records at Stonyhurst are amply sufficient, in nine cases out of ten, to indicate what is taking place in character,

though not exactly in degree, in all the collieries within a radius of 100 miles.

Taking the chart and list of explosions for the year 1871, first as regards the barometrical records, we find that the low pressures prevailing on the 9th and 10th of January were accompanied by 5 explosions, while the low reading recorded on the 16th produced 4. On the 20th of February no less than 7 accidents, fatal in 2 cases, are attributed to the sudden disturbance of the atmosphere coming after a period of steady readings. Several accidents about the middle of March, and from the 10th to the 15th of April, are also referred to low and unsteady pressures, while the slight depression on the 29th of that month, coupled with the comparative height of the temperature, accounts for those on that day. During the months of June and September, several accidents occurred, for which the same cause is assigned; at the end of the latter month, the pressure fell very low, and we have 4 explosions recorded on the 27th. During the latter half of October, we find 14 cases of explosion, due to the changes of pressure which then occurred; and on the 10th of November, we have 4 accounted for by the low state of the barometer. On the 20th December, a very sudden storm passed over the United Kingdom, accompanied by 5 accidents—the most striking case of the year.

In the year 1872, the storm of the 18th of January produced 4 explosions on the 19th; while the more gradual, but, in England, more extensive depression of the 24th, caused only 4—an instance of the statement we made in our number for August, 1872, that “if the successive falls of the mercury are of less magnitude than the first, or than any previous one in the series, the quantity of gas given off cannot possibly be as great on each occasion as if that fall had been preceded by a period of high pressure.” No less than 6 accidents accompanied the barometrical oscillations about the end of February, and the same cause is given for 6 explosions on the 22nd of April. There is no further notice of explosions attributed to a fall of pressure until the 9th and 10th of August, when an area of low pressure passed over the United Kingdom, causing 8 explosions on each of the two days named. A series of 6 explosions, at the end of August, is connected with the reduction of pressure at that time, as are also 2 fatal, and 2 non-fatal, occurrences at the end of October. In the end of November, we have 4 explosions on the 22rd, and 4 on the 27th; and, in December, 7 explosions, for which disturbances in pressure, and a barometrical minimum, are assigned as the causes.

It is worthy of notice, that the 6 explosions on the 22nd of April, and the 8 on the 2nd of December, occurred on a Monday. The atmospheric changes, preceding these explosions, having occurred on the

Sunday, may, perhaps, have caused the mines to be in an exceptionally dangerous state when they were entered next morning.

As regards explosions, which appear to have been due to a rise of the thermometer, we find that in the first days of March, 1871, being the first warm days of the year, 4 accidents are thus accounted for. From May to the 1st of July, we have a series of accidents attributed to the same cause, culminating in 8 on the latter day; as are also 4 on the 10th of August, and 3 on the 13th of October.

Throughout the summer of 1872, a number of explosions occurred, several of which are referred to temperature, especially in the middle of June, and at the beginning, as well as in the last week of July, those on the 5th and 22nd of the latter month being exceptionally noticeable on account of the great heat of the weather at the time.

It is not surprising to find that the knowledge of this subject is still as it were, only in its infancy, and that many and varied causes are assigned as facilitating the escape of gas from the coal. Among other things it has been observed that explosions are more frequent with certain winds than with others, and in evidence taken before the Parliamentary Commission, in 1849, it was stated that there had been no explosion with a north wind since 1800. Similar observations were made in the earlier Wreck Returns, where it was persistently asserted that south-westerly winds were the most destructive winds to shipping. In all such considerations, however, the fact that the mean direction of the wind over the United Kingdom lies between south-west and west should be borne in mind, and when it is remembered that south-west storms are far more frequent than those from other quarters, it would be surprising if the maximum of casualties to shipping were not reached with south-west winds. Similar reasoning may, we think, be applied in the cases of these explosions. At all events, the relative frequency of such winds should not be left out of the calculation.

It is, however, held by some authorities that the undeniably greater prevalence of explosions with southerly winds is attributable to the fact that the windrose shows a maximum of temperature and of vapour tension, and a minimum of barometrical pressure when the true equatorial current is blowing. This theory is, however, hardly borne out, at least quantitatively, by the actual figures recorded, by the various windroses for the year, in London.

The fact appears to be that the changes which principally affect the condition of the air in a mine, are the sudden oscillations which accompany the rapid variations of weather.

In conclusion, then, we would point out that, in our opinion, the analogy between the causes of these explosions in coal mines, and the causes of the principal casualties to shipping, appears to have been

fully demonstrated by these reports of Messrs. Scott and Galloway ; and if, in the case of our merchant shipping, the making as widely known as possible the state of the barometer, and the consequent weather which, in all probability would result therefrom, has been of any service in deterring our mariners from unnecessary exposure to the dangers of the deep, so, in these cases, may we not hope that similar information may, at any rate, be the means of securing greater precaution, when it is morally certain that the mines and workings are in an exceptionally dangerous condition. When we consider that the actual loss of life, not to mention non-fatal casualties resulting from these explosions, amounted in 1871 to 268, and in 1872 to 163, surely it is the duty of every person in any way connected with mines to use every means to guard against such occurrences. It is satisfactory to find that something, at all events, is being done in this direction. One of the general rules of the Coal Mines' Regulation Act requiring that the roads and working-places of every mine, in which inflammable gas has been found within the preceding twelve months, shall be examined daily with a safety-lamp before workmen are allowed to go to work in them, and also that the results of this examination shall be recorded in a book, which shall be kept at the mine, for this purpose ; and another, that "after dangerous gas has been found in any mine, a barometer and thermometer shall be placed above ground in a conspicuous position near the entrance to the mine." That such regulations as these will have good effect we cannot doubt, but with reliable information as to the state of the barometer and thermometer, and the consequent condition of the mines, more widely spread, and as knowledge of the subject increases, we hope to see that even greater good, and a great saving of human life is effected.

ILLEGALLY SUPPLYING A SEAMAN.—BOARD OF TRADE PROSECUTION.—
On the 31st December last, at the Justice of the Peace Court, Aberdeen, a lodging-house keeper residing in Aberdeen, was convicted of having, on the 24th of August last, supplied a seaman to the *Lady Gray*, of Aberdeen, contrary to the provisions of section 147 of the Merchant Shipping Act, 1854, a penalty of 2s. 6d. and £8 costs being inflicted. This being the first prosecution of a crimp in Aberdeen the magistrates intimated that a merely nominal penalty had been inflicted, but that in any future case severe measures would be adopted.

A BILL TO AMEND THE MERCHANT SHIPPING ACTS, A.D. 1875.

[The following is a reprint of the Bill as introduced by the Right Hon. Sir Charles Adderley, the President of the Board of Trade, in February, 1875. It is evidently intended chiefly as a measure to carry into effect the recommendations of the Royal Commissioners on Unseaworthy Ships. It apparently proceeds on the principle of the personal responsibility of ship-owners, masters, and seamen, and is, therefore, like the Acts of 1871 and 1873, in direct opposition to the principles advocated by the Trades' Unionists. The figures we have added in italics in our remarks at the end of each section, refer to the paragraphs of the Report of the Royal Commissioners as printed in our August number of last year.—ED.]

Be it enacted by the Queen's most excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows :—

PRELIMINARY.

1.—*Short Title.*—This Act may be cited as the Merchant Shipping Act, 1875.

2.—*Construction of Act.*—This Act shall be construed as one with the Merchant Shipping Act, 1854, and the Acts amending the same ; and the said Acts and this Act may be cited collectively as the Merchant Shipping Acts, 1854 to 1875.

3.—*Definitions.*—In this Act the term “limits of the United Kingdom” includes any tidal water within the United Kingdom or the Isle of Man, and the sea for a distance of three miles from the coasts thereof, and also any bay, estuary, arm of the sea, sand, shoal, island, or place neighbouring thereto, over which Her Majesty has or may have jurisdiction.

The term “local court of Admiralty” means—(1.) In England any court having jurisdiction under the County Court Admiralty Jurisdiction Act, 1868. (2.) In Scotland the sheriff court of the county. (3.) In Ireland any court having jurisdiction under the Court of Admiralty (Ireland) Act, 1867.

The term “Summary Jurisdiction Acts” means—As to England, the Act of the session of the eleventh and twelfth years of the reign of Her present Majesty, chapter forty-three, intituled “An Act to facilitate the performance of the duties of justices of the peace out of sessions within England and Wales with respect to summary convictions and orders,” and any Acts amending the same.

As to Scotland, "The Summary Procedure Act, 1864."

As to Ireland, within the police district of Dublin metropolis, the Acts regulating the powers and duties of justices of the peace for such district; and elsewhere in Ireland, "The Petty Sessions (Ireland) Act, 1851," and any Acts amending the same.

REGISTRY (PART II. OF MERCHANT SHIPPING ACT, 1854).

4.—*Restrictions on Registration of Wrecked or Abandoned Ships.* 36 and 37 Vict., c. 85, s. 6.—Where application is made for the registry or re-registry as a British ship of any ship which has been wrecked or abandoned, the ship shall not be registered until she has, at the expense of the applicant, been surveyed by one of the surveyors appointed by the Board of Trade, and has been certified by him to be seaworthy.—[This section seems to fill a gap that existed in the old Act, whereby a wrecked foreign ship could be registered as a British ship without survey.]

5.—*Rule as to Names of British Sea-fishing Boats.* 34 and 35 Vict., c. 110, s. 6. 31 and 32 Vict., c. 45.—The rules contained in section six of the Merchant Shipping Act, 1871, with respect to the names of British ships, shall apply to vessels registered as British sea-fishing boats under the Sea Fisheries Act, 1868, in the same manner as if they were British ships.

MASTERS AND SEAMEN (PART III. OF MERCHANT SHIPPING ACT, 1854). WAGES.

6.—*Advance Notes Illegal.*—Any document authorising or purporting to authorise the payment of money on account of a seaman's wages, and made before those wages have been actually earned, shall be void.

No moneys paid in satisfaction or in respect of any such document or otherwise advanced by or on behalf of a shipowner to or on behalf of a seaman on account of his wages before those moneys have been actually earned shall be deducted from his wages, and no person shall have any right of action, suit, or set-off against the seaman or his assignee in respect of any moneys so paid or advanced, or purporting to have been so paid or advanced. Provided that—(1.) Nothing in this section shall invalidate or affect any allotment note duly made under the Merchant Shipping Act, 1854; and (2.) Upon payment to a seaman of his wages there may be deducted therefrom the reasonable cost of such necessary articles (if any) as the shipowner may have *bona fide* supplied to the seaman after his joining the ship.—[This section seems to be intended to carry into effect the distinct recommendation of the Royal Commissioners that "advance notes should be declared illegal." It however makes provision for a supply of clothes to seamen who want them. And it retains the allotment note. Chapter X., pars. 1 to 8, pages 655 and 656.]

7.—*Time of Payment and Effect of Nonpayment of Wages.*—Subject to the provisions of this Act with respect to the deposit of wages with a superintendent of a Mercantile Marine Office, all wages due to any seaman shall be paid at the time when he lawfully leaves the ship on the termination of the voyage, or other the termination of his engagement, and unless paid at that time shall continue to run and become due until they are so paid; but any court having cognizance of the case, upon being satisfied that the delay in payment did not arise from any default on the part of the master or owner of the ship, may, if it think fit, disallow the whole or any part of the wages running and accruing after the time by this Act fixed for payment.—[This section is distinctly in favour of the seaman, as it provides that his wages are to run on until they are paid.]

8.—*Settlement of Wages.* See 17 and 18 Vict., c. 104, s. 175. *Release to be Signed and Attested.*—When a seaman is discharged before a superintendent of a Mercantile Marine Office, the following rules shall be observed with respect to the settlement of his wages—that is to say :—

(1.) When the settlement of his wages is completed he shall sign, in the presence of the superintendent, a release, in such form as may from time to time be prescribed by the Board of Trade, of all claims in respect of the past voyage or engagement, and the master or owner of the ship shall also sign the same, and the superintendent shall also sign and attest it.

(2.) *To be a Discharge.*—The release so signed and attested shall operate as a mutual discharge and settlement of all demands between the parties thereto in respect of the past voyage or engagement.

(8.) *And to be Evidence.*—A certified copy of the release, or of any part thereof, shall be given by the superintendent who signs it, to any person requiring the same, and a copy purporting to be so certified shall be receivable in evidence upon any subsequent question touching such claims as aforesaid, and shall have all the effect of the original of which it purports to be a copy.

(4.) *Deposit of Wages with Superintendent.*—Where there is no dispute as to the amount of wages to which the seaman is entitled, the master or owner may, if the seaman agrees in writing, to pay him a portion of that amount, and subsequently deposit the residue with the superintendent.

(5.) *Form of Agreement as to Deposit.*—The agreement in this case as to the payment and deposit shall be in a form to be prescribed by the Board of Trade, and shall be signed by the seaman in the presence of the superintendent, and shall contain a receipt on the part of the seaman for the part of the wages so paid to him, and shall either specify the amount of the residue to be deposited with the superin-

tendent, or state that that amount is to be determined by the superintendent, and shall also specify the time, not exceeding seven days from the date of the agreement, at which that amount is to be deposited.

(6.) *Superintendent to Remit Sum Deposited.*—The superintendent shall remit or pay the residue so deposited with him in such manner as the seaman directs, and shall have full power to give any receipt on behalf of the seaman in respect of that residue, and any such receipt shall be of the same effect as if it had been a release signed by the seaman and attested by the superintendent.

(7.) *Wages to Run if Default made in Deposit.*—If the agreement as to the deposit is observed the seaman's wages shall cease to run from the date of the agreement, but if default is made in the deposit at the specified time such wages shall run and become due for every day during which such default continues.

(8.) *Power for Superintendent to give Receipt where Seaman is Absent or Incapable.*—If at the time fixed for the settlement of a seaman's wages he absents himself from the place appointed for such settlement, or is not in a fit condition to give a receipt in person for his wages, the superintendent may receive the seaman's wages on his behalf, and sign a release for the same, and any such release shall have the same effect as if it had been signed by the seaman and attested by the superintendent.

(9.) *Voucher to be given to Master and to be Evidence.*—Upon any payment being made by a master before a superintendent, the superintendent shall, if required, sign and give to the master a statement of the whole amount so paid; and that statement shall, as between the master and his employer, be received as evidence that he has made the payments therein mentioned.

(10.) *Decision of Superintendent in small Disputes to be Final.*—In any question as to wages which may be raised before the superintendent between a master or owner and any of his crew, if the amount in dispute does not exceed two pounds, the decision of the superintendent in the matter shall be final.—[This section is all in the seaman's favour, and provides a ready and simple method of securing payment of, or remittance of, wages in the way best suited to his wants. The provisions in this section will, if the seaman avails himself of them, take him out of the hands of crimps.]

DISCIPLINE.

9.—*Charges against Officers.* See 17 and 18 Vict., c. 104, ss. 241, 494, 498, and 25 and 26 Vict., c. 63, ss. 23, 24.—If any certificated officer, that

is to say, any master, mate, or engineer possessing a certificate of service or competency, is charged with incompetency, or with having been guilty of any gross act of misconduct, drunkenness, tyranny, or negligence, proceedings may be taken against him as follows:—

- (1.) A complaint may be made against the officer to any of the following courts; that is to say, in England, any stipendiary or metropolitan police magistrate, in Scotland any sheriff, and in Ireland any divisional justice or resident magistrate; and any such complaint shall be deemed to be a matter in which the court has authority by law to make an order, and to the proceedings in which the Summary Jurisdiction Acts shall apply.
- (2.) If in the opinion of the Board of Trade the proceedings cannot be conveniently taken before any of the above-mentioned courts they may be taken by application in a summary way to a local Court of Admiralty; and any such application shall be deemed to be an application in an Admiralty cause within the jurisdiction of the court.
- (3.) The court shall hear and determine the complaint or application with the aid of an assessor or assessors of nautical or engineering skill and knowledge, to be appointed in England by the Judge of the High Court of Admiralty; in Scotland by the Lord President of the Court of Session, or him failing, by the Lord Justice Clerk, and in Ireland by the Judge of the Court of Admiralty in Ireland; and for the purpose of enabling this appointment to be made, the Board of Trade shall, before commencing proceedings, give notice of their intention to do so to the registrar of the court by whom the appointment is to be made.
- (4.) The Board of Trade may appear and conduct the proceedings either by their solicitor or by any other person appointed on their behalf.
- (5.) If the officer is proved to be incompetent or to have been guilty of any gross act of misconduct, drunkenness, tyranny, or negligence, the court may order his certificate to be cancelled, and may, if it think fit, by its order direct that a certificate of a lower grade, to be specified in the order, be substituted for the certificate to be cancelled.
- (6.) The court shall, at the conclusion of the case, or as soon afterwards as possible, state in open court the decision of the court with respect to cancelling the certificate, and shall in all cases send a full report upon the case, with the evidence, to the Board of Trade.
- (7.) If the court orders the officer's certificate to be cancelled, the Board of Trade shall cancel it, and shall if the order of the court so

require, grant a new certificate of a lower grade in substitution for the certificate so cancelled.

(8.) The Board of Trade may, on proof to their satisfaction of the competency, or, as the case may be, good conduct of any officer whose certificate has been cancelled under this Act, re-issue and return to him his certificate.—[This section takes all these cases away from Local Marine Boards, and gives them to police courts or Vice-Admiralty Courts. Assessors are no longer to be appointed by the Board of Trade, but the Board of Trade is to be public prosecutor. The personal charges against masters and officers are by this section to be kept distinct from inquiries into wrecks and casualties.]

10.—*Misconduct Endangering Ship or Life or Limb.* 17 and 18 Vict., c. 104, s. 239.—Any master of or any seaman or apprentice belonging to any British ship who, by wilful breach of duty, or by neglect of duty, or by reason of drunkenness, either—(1.) Does any act tending to the immediate loss, destruction, or serious damage of such ship, or tending immediately to endanger the life or limb of any person belonging to or on board such ship; or, (2.) Refuses or omits to do any lawful act proper and requisite to be done by him for preserving such ship from immediate loss, destruction, or serious damage, or for preserving any person belonging to or on board such ship from immediate danger to life or limb, shall for every such offence be guilty of a misdemeanour.—[This seems to be a re-enactment only.]

11.—*Mutiny.* 11 W. 3, c. 7, s. 8.—Any seaman or apprentice to the sea service who commits any of the following offences, that is to say, either (1.) Unlawfully takes any ship out of the authority of the master, or conspires or unlawfully endeavours to take a ship out of the authority of the master; or (2.) Unlawfully confines the master or any officer of his ship when on the high seas, or conspires or unlawfully endeavours to confine him; or (3.) Makes or conspires or endeavours to make a revolt on board any ship when on the high seas, shall be guilty of mutiny.

Whoever is guilty of mutiny shall be deemed guilty of felony, and shall for each offence be liable to be kept in penal servitude for any term not less than the minimum term allowed by law, or to be imprisoned for any term not exceeding two years, with or without hard labour.

Whoever is guilty of mutiny may, instead of being prosecuted for a felony, be prosecuted in a summary manner, and if so prosecuted and convicted shall be liable to imprisonment for any period not exceeding six months, with or without hard labour, and to forfeit all wages due to him.—[This section is evidently intended to be in accordance with the

recommendation of the Report of the Royal Commissioners. *Chapter VII., pars 7 and 8, page 652.*]

12.—*Combining to Disobey.* 17 and 18 Vict., c. 104, s. 248.—Any seaman or apprentice to the sea service who combines with any of the crew to disobey lawful commands, or to neglect duty, or to impede the navigation of the ship or the progress of the voyage, shall be liable, on summary conviction, to imprisonment for any period not exceeding twelve weeks with or without hard labour, and, at the discretion of the court, either in addition to or in substitution for such imprisonment, to forfeit all or any part of the wages due to him.—[This and the two following sections contain the substance of part of section 243 of the Act of 1854.]

13.—*Assault on Officer.* 17 and 18 Vict., c. 104, s. 248.—Any seaman or apprentice to the sea service who assaults any officer of his ship shall be liable, on summary conviction, to imprisonment for any period not exceeding twelve weeks, with or without hard labour, and either in addition to or in substitution for such imprisonment to forfeit a sum not exceeding one month's pay.

14.—*Insubordination, Breach of Discipline and Negligence.* 17 and 18 Vict., c. 104, s. 248.—Any seaman or apprentice to the sea service who is—(a.) Guilty of wilful disobedience to any lawful command, or of any other act of insubordination; or (b.) Drunk when on duty, or guilty of any other gross breach of discipline; or (c.) Guilty of gross carelessness or wilful neglect in the discharge of his duty, shall be liable on summary conviction to imprisonment for any period not exceeding four weeks, with or without hard labour, and at the discretion of the court, either in addition to or in substitution for such imprisonment, to forfeit out of his wages a sum not exceeding ten days' pay. If the insubordination or neglect is continued, he shall be liable to imprisonment for any period not exceeding twelve weeks, and at the discretion of the court, either in addition to or in substitution for such imprisonment, to forfeit out of his wages, for every twenty-four hours continuance of such insubordination or neglect, either a sum not exceeding six days' pay, or any expenses which have been properly incurred in hiring a substitute.

15.—*Neglect to Keep Look Out.*—It is hereby declared to be the duty of every master of a ship to provide for a proper look-out being duly placed, kept, and relieved, and to be the duty of every officer in charge of the deck to see that a proper look-out is kept whilst he is so in charge. Any master or officer who makes default in performance of this duty shall be liable, on summary conviction, to imprisonment for any period not exceeding six months, and if he is a certificated officer to have his certificate cancelled. Any seaman or apprentice to the sea service who,

when on the look-out, is drunk or asleep, or otherwise neglects to keep the look-out, shall be liable, on summary conviction, to imprisonment for any period not exceeding eight weeks, and at the discretion of the court, either in addition to or in substitution for such imprisonment, to forfeit out of his wages a sum not exceeding one month's pay.—[This is a new and distinct declaration of the duty of a master, and a distinct provision for the punishment of seamen neglecting their duty. It appears to be aiming at the distinct recommendation of the Royal Commissioners.—*Chapter VII., ss. 9 and 10, pages 652 and 658.*]

16.—*Desertion and Kindred Offences.* 11 W. 3, c. 7, s. 17. 17 and 18 Vict., c. 104, s. 243.—Any seaman or apprentice to the sea service who commits any of the following offences (in this Act referred to as desertion or a kindred offence), that is to say, (a.) Deserts from his ship; (b.) Neglects or refuses, without reasonable cause, at any time during his engagement, to join his ship, or to proceed to sea in his ship; or (c.) Is absent without leave, and without sufficient reason, from his ship or his duty at any time within twenty-four hours of the ship's sailing from any port either at the commencement or during the progress of any voyage, shall be liable, on summary conviction, to imprisonment for any period not exceeding three months, with or without hard labour, and at the discretion of the court, either in addition to or in substitution for such imprisonment, (1.) In cases of desertion, to forfeit all or any part of the effects he leaves on board, and all or any part of the wages which he has then earned, and also, if such desertion takes place abroad, to forfeit all or any part of the wages he may earn in any other ship in which he may be employed until his next return to the United Kingdom, and to satisfy any excess of wages paid to any substitute engaged in his place at a higher rate of wages than the rate stipulated to be paid to him; and (2.) In the case of any of the preceding offences not amounting to desertion, or not treated as such by the master, to forfeit a sum not exceeding the amount of ten days' pay, and in addition for every twenty-four hours of such unlawful absence, either a sum not exceeding six days pay, or any expenses which have been properly incurred in hiring a substitute. In any proceeding against a seaman or apprentice under this section he may, if he think fit, be sworn and examined as a witness in the case.—[This is also a re-enactment of parts of section 243 of the Merchant Shipping Act, 1854, with a neater classification, and the introduction of the phrase "desertion or a kindred offence."]

17.—*Power of Arrest in cases of Desertion.* 17 and 18 Vict., c. 104, ss. 246, 247, and 248.—Where any person is guilty of desertion or a kindred offence, the master or any mate, or the owner, ship's husband, or consignee of the ship to which the offender belongs, or any person specially

authorised in writing by the owner or master of the ship, may arrest the offender, without warrant, in any place in Her Majesty's dominions, and also in any place out of Her Majesty's dominions, if and so far as the law of that place so permits; and every constable shall give to the person making the arrest such assistance as he may require. The person arresting the offender may, and in case the offender so requires and it is practicable, shall, convey him before some court having cognizance of the offence, and for that purpose may detain him in custody for such period not exceeding *twenty-four* hours as may be necessary. He may also, if the offender does not require to be taken before the court, or if there is no such court at or near the place, at once convey the offender on board his ship. If any such arrest appears to the court to have been made on improper or insufficient grounds, the person who makes the same or causes the same to be made shall incur a penalty not exceeding *twenty* pounds; but the infliction of that penalty shall be a bar to any action for false imprisonment in respect of the arrest.—[There is nothing of importance new in this section.]

18.—*Absence without Leave.* 17 and 18 Vict., c. 104, s. 248.—Any seaman or apprentice to the sea service who quits his ship without leave after her arrival at her port of delivery, and before she is placed in security, shall be liable on summary conviction to forfeit out of his wages a sum not exceeding one month's pay. Any seaman or apprentice to the sea service who is at any other time absent from his ship or his duty without leave and without sufficient reason, shall be liable on summary conviction to imprisonment for any period not exceeding four weeks, and at the discretion of the court, either in addition to or in substitution for such imprisonment, to forfeit out of his wages a sum not exceeding ten days' pay.—[This section contains nothing new, and is only a re-enactment in a more compact form of a part of section 243 of the Act of 1854.]

19.—*Wilful Damage and Embezzlement.* 17 and 18 Vict., c. 104, s. 243.—Any seaman or apprentice to the sea service who wilfully damages his ship, or embezzles or takes without permission any of her stores or cargo, or wilfully or by gross negligence wastes or damages the same, or embezzles or wilfully damages any property belonging to the crew, or passengers, or other persons on board her, shall be liable, on summary conviction, to imprisonment for any period not exceeding twelve weeks, with or without hard labour, and, at the discretion of the court, either in addition to or in substitution for such imprisonment, to forfeit out of his wages, a sum equal in amount to the loss thereby sustained.—[The same remark applies to this section.]

20.—*Double Penalties where Offence tends to Endanger Ship, Life, or Limb.*—Whosoever commits any of the offences, which, by the provisions

of this Act relating to discipline, are punishable on summary conviction, under such circumstances that the offence tends to the immediate loss, destruction, or serious damage of the ship to which the offender belongs, or tends immediately to endanger the life or limb of any person belonging to or on board the ship, shall be liable to a punishment not exceeding double that to which he would have been otherwise liable.—[This is new and it seems to be in the direction indicated by the Royal Commission of maintaining discipline. It is only right that double penalties should attach in the cases named.]

21.—*Liability of Seamen for Loss to Owner caused by Smuggling.* 17 and 18 Vict., c. 104, s. 243.—Any seaman or apprentice to the sea service belonging to any ship who is convicted of any act of smuggling, whereby loss or damage is occasioned to the master or owner of the ship, shall be liable to pay to the master or owner such a sum as is sufficient to reimburse him for the loss or damage; and the whole or a proportionate part of his wages may be retained in satisfaction or on account of the liability, without prejudice to any further remedy.—[Nothing new in substance.]

22.—*S. 244 of Merchant Shipping Act, 1854, to be Read as Referring to this Act.*—Section two hundred and forty-four of the Merchant Shipping Act, 1854, shall be construed as if the words “enumerated in the sections of this Act relating to discipline” were therein substituted for the words “enumerated in the last preceding section.”—[This is evidently a mere arrangement for convenience of wording and reference.]

23.—*Saving for other Enactments.*—Nothing in this Act shall prevent any person from being liable under any other enactment of the Merchant Shipping Acts, 1854 to 1875, or under any other Act or otherwise to any other or higher penalty or punishment than is provided for any offence by this Act, so that no person be punished twice for the same offence.—[So long as a seaman is not punished twice over for the same offence, it appears to be only wise that for more serious offences he should be tried in the same way as any other British subject.]

24.—*Power for Court of Summary Jurisdiction to Commit for Trial, &c., in Case of Serious Offences.*—Where proceedings are taken before any court of summary jurisdiction, in pursuance of this or any other Act or otherwise, against any person for any offence which is punishable under this Act, if the court think the offender should be indicted or otherwise proceeded against for a punishment exceeding that which the court has power to inflict, the court may, instead of adjudicating summarily on the case, deal with it in such manner as will enable proceedings to be taken against the offender for such larger punishment.—[The same remark applies to this section.]

SAFETY (PART IV. OF MERCHANT SHIPPING ACT, 1854).

25.—*Particulars to be Marked on British Ships.* 36 and 37 Vict., c. 85, s. 8.—Every British ship registered on or after the first day of January one thousand, eight hundred and seventy-six shall before registry, and every British ship registered before that day shall on or before that day, be permanently and conspicuously marked to the satisfaction of the Board of Trade, as follows:—

- (1.) Her name shall be marked on each of her bows, and her name and the name of her port of registry shall be marked on her stern, on a dark ground in white or yellow letters, or on a light ground in black letters, such letters to be of a length not less than four inches, and of proportionate breadth.
- (2.) Her official number, and the numbers denoting her tonnage, shall be cut in on her main beam.
- (3.) A scale of feet for the purpose of denoting her draught of water shall be marked on each side of her stem and of her stern-post.
- (4.) A scale of feet for the purpose of denoting the extent of her clear side shall be marked on each of her sides at a distance abaft the stem equal to three-fifths of her length between perpendiculars. The zero point of this scale shall be at the deck up to which full scantlings are carried, and shall be marked at a point level with the top of the deck plank next the water-way at the place of marking, and the scale shall be carried downwards to a distance equal to one-third of the ship's depth below the said zero point.
- (5.) All these scales shall be marked in Roman capital letters or in figures, not less than six inches in length, the lower line of the letters or figures to coincide with the draught line or water line denoted thereby. The letters or figures shall be painted white or yellow on a dark ground, or black on a light ground.
- (6.) The marks required by this section shall be permanently continued, and no alteration shall be made therein, except in the event of any of the particulars thereby denoted being altered in the manner provided by the Merchant Shipping Acts, 1854 to 1875.

Provided that—

- (a.) The Board of Trade may exempt any class of ships from the requirements of this section or any of them.
- (b.) 31 and 32 Vict., c. 45.—No fishing vessel duly registered, lettered, and numbered in pursuance of the Sea Fisheries Act, 1868, shall be required to have her name and port of registry marked under this section.

(c.) If any registered British ship is not within a British port of registry at any time before the first day of January one thousand eight hundred and seventy-six, she shall be marked as by this section required within one month after her next return to a British port of registry subsequent to that date.—[This is a re-enactment, with the exception of sub-section 4, which appears to be an attempt to put into legal form the distinct recommendation of the Royal Commissioners (*Chap. II., s. 12, page 640*), that “the zero point of this scale should be at the lowest part of the upper side of the highest deck—that is, of the deck up to which the ship is completely strong and water-tight.” This is clearly not an attempt to fix a load-line. The Royal Commissioners distinctly reported against that. *Chap. II., ss. 10 and 11, page 639.*]

26.—*Penalty for Offences in relation to Marks on Ships.* 36 and 37 Vict., c. 85, s. 3.—Any owner or master of a British ship who neglects to cause his ship to be marked as by this Act required, or to keep her so marked, and any person who conceals, removes, alters, defaces, or obliterates, or suffers any person under his control to conceal, remove, alter, deface, or obliterate any of the said marks, except in the event aforesaid, or except for the purpose of escaping capture by an enemy, shall for each offence incur a penalty not exceeding one hundred pounds, and any principal officer of customs may detain a ship which is insufficiently or inaccurately marked until the insufficiency or inaccuracy has been remedied. If any of the scales of feet required by this Act is in any respect inaccurate, so as to be likely to mislead, the owner of the ship shall incur a penalty not exceeding one hundred pounds.—[This appears to be only a re-enactment.]

27.—*Record Draught of Water and Extent of Clear Side.* See 34 and 35 Vict., c. 110, s. 5.—Every master of a British sea-going ship, who is required to keep an official log-book shall, when the ship is completely loaded for the purpose of proceeding to sea from any dock, wharf, port, or harbour, enter in the official log-book, in the place provided for that purpose, the ship's draught of water and the extent of her clear side, in feet and fractions of feet, as denoted by the scales of feet on her stem, stern-post, and sides, and shall produce these entries to any officer of the Board of Trade, officer of customs, or British consular officer whenever required by him so to do. The Board of Trade may in any case or class of cases in which they think it expedient so to do, direct any person appointed by them for the purpose to record, in such manner and with such particulars as the Board of Trade may direct, the ship's draught of water and the extent of her clear side, as denoted by the scales of feet on her stem, stern-post, and sides, upon her leaving or being about to leave any dock, wharf, port, or harbour in the United Kingdom, the Channel

Islands, or Isle of Man, for the purpose of proceeding to sea ; and such person shall thereupon keep such record, and shall from time to time forward the same or a copy thereof to the Board of Trade. Any entry or record made in accordance with the requirements of this section, and any copy of such record, if produced by or out of the custody of the Board of Trade, shall be admissible in evidence of the ship's draught of water or of the extent of the ship's clear side (as the case may be) at the time specified in the entry or record. Any master who fails to comply with the requirements of this section shall incur a penalty not exceeding twenty pounds. This section shall not come into operation until the first day of January one thousand eight hundred and seventy-six.—[This section is in substance and effect similar to the 5th section of the Act of 1871, which remains in force until this section comes into force. The difference between the two appears chiefly to have reference to the scale of feet. *Chap. II., ss. 12 and 18, page 640.*]

28.—*Entry of Deck Cargo in Official Log.*—Whenever any British foreign-going ship is about to proceed to sea from any port in the United Kingdom, the Channel Islands, or the Isle of Man, and has any deck cargo on board, the master of the ship shall make an entry in the ship's official log-book in the place provided for that purpose, showing the weight, bulk, and description of all the deck cargo on board the ship at the time of her proceeding to sea, and shall leave a copy of this entry at the custom-house (if any) at the port, or in default shall incur a penalty not exceeding twenty pounds. For the purposes of this section the term "deck cargo" means any cargo placed upon the upper uncovered surface of any portion of the ship, or in any space above the tonnage-deck which has not been included in the cubical contents forming the registered tonnage of the ship. The copies of these entries shall be made in forms to be provided for that purpose by the Board of Trade.—[This section will not go far enough to please those who object to deck-cargoes ; but as deck cargoes are a necessity, it goes as far as is probably possible by requiring a record of them to be made and kept in the official log. The enactments relating to official logs will be found in the Merchant Shipping Act, 1854, sections 250 to 287. This section is in direct accord with the recommendation of the Royal Commission. *Chap. II., s. 18, page 641.*]

29.—*Equipments for Sea-going Ships.* 17 and 18 Vict., c. 104, ss. 292, 293. 36 and 37 Vict., c. 85, s. 15. 18 and 19 Vict., c. 119, s. 27.—It shall be the duty of the owner of every British sea-going ship to see that she is properly equipped with boats, and with rafts or other appliances for saving life, and a ship shall not be deemed seaworthy unless she is properly so equipped. A ship shall be deemed to be properly so equipped—(1.) If her boats, rafts, and other appliances are in

good order, and furnished with all requisites for lowering and for use, and are so carried as to be ready for instant use in case of emergency. (2.) (a.) If her boats or rafts are sufficient to carry all the persons on board the ship; or (b.) in the case of ships surveyed by the Board of Trade as "passenger steamers" or "passenger ships," if her boats and other appliances are in accordance with the regulations contained in the first schedule to this Act, or such modifications thereof as may from time to time be sanctioned by the Board of Trade; and (3.) if she is furnished with at least two life-buoys or life-jackets, or, in the case of a ship surveyed by the Board of Trade, with life-buoys or life-jackets of such number and description as the Board of Trade may from time by general instructions direct.—[This section takes the place of the present enactments which require boats to be carried by all ships alike according to tonnage only. It also takes the place of the Emigration Act scale. It recognises two important facts: one that ships other than passenger ships, need only carry enough boats for the people on board; and, two, that a passenger ship may not be able to carry boats, &c., enough to save everyone. This latter fact appears to have been looked boldly in the face and admitted. By the schedule it will be seen that all boats to be carried are to be lifeboats fitted with all requisites for use. This section will admit of the carriage of all sorts of "deck seats," "pontoons," "rafts," "arks," and the various other ingenuities that have been proposed by patentees and have given rise to so much discussion. See recommendation of Royal Commission, *Chap. IV., s. 5, page 646.*]

80.—*Adjustment of Ships' Compasses.* See 17 and 18 Vict., c. 104, s. 301.—A steamship shall not be deemed to have her compasses properly adjusted within the meaning of section three hundred and one of the Merchant Shipping Act, 1854, unless they have been adjusted by a person holding a valid certificate, granted as hereinafter mentioned:—(1.) For the purpose of granting such certificates the Board of Trade shall cause examinations to be held from time to time in the laws of the deviation of the compasses in a ship, and in the manner of compensating for or correcting such deviation. (2.) The Board of Trade may appoint times and places for these examinations, and may appoint, remove, and re-appoint examiners to conduct the same, and may from time to time make, alter, and revoke rules as to the conduct of the examinations and the qualifications of the applicants. (3.) Every applicant for examination shall pay to such persons as the Board of Trade appoint for the purpose such fees as the Board direct. (4.) All such fees shall be carried to the Mercantile Marine Fund, and all expenses attending the examinations shall be paid out of the Mercantile Marine Fund. (5.) The Board of Trade shall deliver to every applicant who is duly reported to have passed the examination satisfactorily, and to have given satisfactory

evidence of character, a certificate to that effect. (6.) The Board of Trade may cancel any certificate so granted on proof of the incompetency or misconduct of the holder thereof.—[This section, as far as it goes, appears to be in accordance with a distinct recommendation of the Royal Commission, but falls short of it. The Royal Commissioners wished it to apply to all iron ships, whereas, as worded, it only applies to surveyed steamships. *Chap. IV., s. 12, page 647.*]

81.—*Appointment of Surveyors in British Possessions.* 81 and 82 Vict., c. 129, s. 8.—The governor of any British possession may from time to time appoint fit and proper persons to be surveyors of British ships for the purposes of the Merchant Shipping Acts, 1854 to 1875, and the persons so appointed shall and may exercise within that possession all the powers of surveyors appointed by the Board of Trade under the Merchant Shipping Act, 1854.—[This appears to be necessary to provide for surveys in the Colonies.]

32.—*Explanation of s. 11 of Shipping Act, 1871.* 84 and 85 Vict., c. 110, s. 11.—Section eleven of the Merchant Shipping Act, 1871, which makes the sending of an unseaworthy ship to sea a misdemeanour, shall be construed as if the words “or take” were added after the words “to send,” and as if the words “or takes” were added after the word “sends,” and shall be deemed to extend to and include the master of the ship.—[This would appear to be in accordance with a direct recommendation of the Royal Commissioners. *Chap. II., s. 11, p. 689.* The marginal note appears to be scarcely comprehensive enough to convey the meaning of the section. There is no doubt that a master ought to be responsible for the loading, and trim, and sufficiency of the crew of his ship; but it may be a question of how far a master who is just appointed can be responsible for the structural seaworthiness of the engines, boilers, and hull. The original section in the Act of 1873 probably, however, covers this.]

MERCANTILE MARINE FUND (PART VII. OF MERCHANT SHIPPING ACT, 1854).

83.—*Grants to Training-ships.*—It shall be lawful for the Board of Trade to make out of the Mercantile Marine Fund grants to managers of training-ships in respect of boys trained in those ships, who are in point of physical capacity, age, character, and acquirements qualified to serve in the merchant service and in the Royal Naval Reserve. The grants shall be made upon such conditions as Her Majesty may from time to time by Order in Council determine.—[The Royal Commissioners recommended a system of school-ships and apprentices, but they recommended that the shipowner should be taxed specially for the purpose of the

school-ships if he did not carry apprentices. The simpler way, however, appears to be that followed in this section by payment out of the Mercantile Marine Fund. We have never seen why the State should educate any class of skilled labourers for the special benefit of any particular class of employers, but that objection, to a great extent, is said to fall through, when, as in this case, the labourer is to be educated at the cost of the trade in which he is to be employed, and when he is also to be specially trained for the defence of the country at large, thereby rendering unnecessary the existence of an enormous standing Navy. If the existence of trained merchant seamen is, as we have all along contended that it is, necessary for the safety of the State, then the cost of assisting to educate them is a legitimate charge on the State, whether it be taken in the first place out of the Mercantile Marine Fund, or whether it be taken directly out of a vote. It is to be hoped that nothing more will be heard about compulsory apprenticeships. *Cap. VIII., ss. 1 to 8, pages 653 and 654.*]

WRECK AND SALVAGE (PART VIII. OF MERCHANT SHIPPING ACT, 1854).

34.—*Preliminary Inquiries into Shipping Casualties.* 17 and 18 Vict., c. 104, ss. 432, 448.)—In case of any of the events following (in this Act referred to as shipping casualties)—that is to say (1.) Where within the limits of the United Kingdom any British or foreign ship or boat is or has been in distress, or lost, wrecked, stranded, abandoned, or otherwise damaged, or has been in collision with any British or foreign ship or boat, or the life of any person belonging to such ship or boat has been lost. (2.) Where without the limits of the United Kingdom any British ship or boat is or has been in distress, or lost, wrecked, stranded, abandoned, or otherwise damaged, or has been in collision with any British or foreign ship or boat, or the life of any person belonging to such ship or boat has been lost, and any witness is found within the United Kingdom, the receiver for the district where the shipping casualty happens, or where any such witness is found, as the case may be, or some person other than the receiver appointed for the purpose by the Board of Trade shall, subject to instructions from the Board of Trade, and in the manner provided by this Act, make a preliminary inquiry respecting the shipping casualty, and the causes thereof, and the circumstances attending the same.—[This and the next section appear to be a successful attempt to throw into small space the present clauses, known as deposition clauses; beyond doing this, and clearing up some ambiguity, there appears to be nothing new in them.]

35.—*Manner of Conducting Preliminary Inquiries.* 17 and 18 Vict., c. 104, ss. 432, 448, 449.—For the purposes of any such preliminary inquiry the receiver or other person appointed to make the inquiry shall have the same powers, and any person failing to comply with his direc-

tions shall be liable to the same penalties as if the receiver or other person so appointed were an inspector appointed under the Merchant Shipping Act, 1854. The receiver shall examine each witness on oath, and shall take down in writing and sign the examinations, including therein any extracts which he thinks fit to make from the ship's logs or other papers, and may require the witnesses to sign their examinations respectively. He shall make two copies of the examinations and extracts, and shall send one of the copies to the Board of Trade and the other to the secretary of Lloyd's, in London, and the last-mentioned copy shall be placed by the said secretary in some conspicuous situation for the inspection of persons desirous of examining the same. Any examinations (with the extracts from logs or papers included therein) taken in pursuance of this section, purporting to be signed by the person taking the same, and also any copy thereof purporting to be certified by the Board of Trade as a true copy under their seal, or under the hand of one of their secretaries or assistant secretaries, shall in all courts, and before any person having by law or consent authority to take evidence, be admissible as evidence of any matter contained therein relative to the casualty, and the causes thereof, and the circumstances attending the same, whether or not such matter was material to the inquiry by the receiver. Any witness of a shipping casualty found at a place other than the place where a preliminary inquiry respecting the casualty is or may be held, may be examined by a receiver or other person appointed by the Board of Trade at the place where the witness is found.—[See note in preceding section.]

36.—*Statements to be made by the Master of a British Ship to which a Shipping Casualty has happened.*—Whenever a shipping casualty happens in the case of a British ship or boat, the master, or, if the master is dead, the chief surviving officer shall, upon first landing in the United Kingdom after the happening of such casualty, and within twenty-four hours of such landing, attend and submit himself for examination before the receiver for the district where the place of his landing is situate, or other the person appointed to hold inquiries into shipping casualties in the district, unless he has been previously examined or excused from attending for examination by a receiver. If any master or officer makes default in obeying the provisions of this section he shall incur a penalty not exceeding fifty pounds.—[This is important. Under existing law the "Receiver" has to find the master. Under this clause the master must find the "Receiver."]

37.—*Formal Investigation of Shipping Casualties.* 17 and 18 Vict., c. 104, s. 493. See 34 and 35 Vict., c. 78, s. 7.—Where it appears to the Board of Trade, either upon or without a preliminary inquiry by a receiver or other person, that a formal investigation of a shipping casualty

and of the causes thereof, and of the circumstances attending the same, is expedient, the Board of Trade may by order direct such investigation to be held, and determine the place for the holding thereof; and with respect to such investigation the following provisions shall have effect:—

- (1.) The investigation shall be held by one of the following magistrates, that is to say, in England a stipendiary or metropolitan police magistrate, in Scotland a sheriff, and in Ireland a divisional justice or resident magistrate.
- (2.) The magistrate shall hold the investigation with the assistance of an assessor or assessors of skill and experience in seamanship, or in the building, loading, or management of ships and their machinery and equipments, as the case may require, to be appointed in England by the judge of the High Court of Admiralty, in Scotland by the Lord President of the Court of Session, or, him failing, the Lord Justice Clerk, and in Ireland by the Judge of the Court of Admiralty of Ireland; and for the purpose of enabling this appointment to be made, the Board of Trade shall give notice that the investigation is to be held to the registrar of the court by whom the appointment is to be made.
- (3.) The magistrate shall hold the investigation in open court, in such manner and under such conditions as he may think most effectual for ascertaining the causes and circumstances of the casualty and enabling him to make the report in this section mentioned.
- (4.) The Board of Trade may appoint a person to conduct the case on their behalf.
- (5.) The magistrate shall have for the purpose of the investigation all the powers which he would have under the Summary Jurisdiction Acts if the investigation were a matter in which he had authority by law to make an order, and in addition the following powers; namely,
 - (a.) He may, with or without the assessor or assessors, if any, go on board any ship or boat, and inspect the same or any part thereof, or any of the machinery, boats, equipments, or other articles on board thereof.
 - (b.) He may by summons under his hand require the attendance of all such persons as he thinks fit to call before him and examine for the said purpose, and may for that purpose require answers or returns to such inquiries as he thinks fit to make.
 - (c.) He may require and enforce the production of all books, papers, and documents which he considers important for the said purpose.
 - (d.) He may require any person examined to make and sign a declaration of the truth of the statements made by him in his examination.

- (6.) Every person so summoned shall be allowed such expenses as would be allowed to a witness attending on subpoena before a court of record, and in case of dispute as to the amount to be allowed the same shall be referred by the magistrate to a master of one of the superior courts, who, on request under the hand of the magistrate, shall ascertain and certify the proper amount of those expenses.
- (7.) The magistrate shall make a report stating the causes of the casualty and all the circumstances attending the same, and whether the same was due wholly or partly to the act or default of any person or persons, or to circumstances beyond the control of any person.

He may state in the report such extracts from and observations on the evidence as he thinks fit, and shall state any matters arising out of the investigation of which he thinks the Board of Trade should be informed.

The report shall be read in open court, and shall forthwith be sent to the Board of Trade, and the Board may, if they see fit, publish the same.

- (8.) The magistrate may make such order as he thinks fit respecting the costs and expenses of the investigation; and such order shall, on the application of any person entitled to the benefit of the same, be enforced by the magistrate as if it had been made in some matter within his ordinary jurisdiction.
- (9.) One of Her Majesty's Principal Secretaries of State may, with the approval of the Commissioners of Her Majesty's Treasury, award such remuneration as he thinks reasonable to any magistrate acting under this section, and to any assessor appointed under this section, in respect of his services hereunder, *and such remuneration shall be paid out of moneys to be provided by Parliament.*
- (10.) The Board of Trade may from time to time, with the approval of the Lord Chancellor, and so far as relates to fees with the approval of the Commissioners of Her Majesty's Treasury, make general orders with respect to the service of notice on persons interested in any such investigation, the conditions on which persons may appear thereat, the persons who may be made liable for the costs thereof, the fees to be paid in respect thereof, and generally as to the mode of conducting the investigations, and these orders shall have effect as if they were enacted in this Act.
- (11.) If, in the opinion of the Board of Trade, an investigation under this section cannot be conveniently held by any of the magistrates mentioned in this section, the Board may, by order, direct the investigation to be held by a judge of a local Court of Admiralty to be named in the order, and thereupon all the provisions of this

section shall apply to the judge so named, and to the investigation to be held by him, in the same manner as if he were one of the magistrates hereinbefore mentioned.—[This section is very important. It separates the inquiry into the loss of a ship, from any investigation of charges against the officers. The inquiry is to be (it would appear) a mere inquest leading directly to nothing as regards the conduct or misconduct of anybody. The Admiralty Court are to appoint assessors in future, and the Board of Trade are merely to become orderers of inquiry and conductors of the case on behalf of the public. The last paragraph of this clause would appear to indicate that these inquiries will gradually be undertaken by County Courts having Admiralty jurisdiction. The section is attempted in accordance with the distinct recommendation of the Royal Commissioners. *Chap. 5, s. 19, p. 649.*]

88.—*Power to Appoint a Skilled Assessor to Coroner.* See 34 and 35 *Vict.*, c. 78, s. 8.—Where any coroner in England holds, or is about to hold, an inquest on the death of any person occasioned by an accident happening on board of, or in connection with, any ship or boat, and makes a written request to the Board of Trade in this behalf, the Board of Trade may, if they think fit, appoint some competent person, possessing special skill and experience in seamanship, or in the building, loading, or management of ships and their machinery and equipments, as the case may require, to assist in holding the inquest, and the appointee shall act as the assessor of the coroner, and shall make the like report to the Board of Trade, and the report shall, if the Board think fit, be made public in like manner as in the case of a formal investigation of a shipping casualty under this Act.—[This will probably be a very useful clause, and, as it makes use of the coroner, is a step in the right direction. It is to be hoped that this clause will lead to an extension of coroner's duties in regard to shipping casualties.]

89.—*Investigations of Shipping Casualties in British Possessions.*—The legislature of any British possession other than the Isle of Man may, by an Act or Ordinance, make provision for holding inquiries and investigations respecting shipping casualties happening either within or beyond the territorial limits of that possession, and for the attendance and examination of witnesses at such inquiries and investigations; provided that every such Act or Ordinance shall be void so far as it is enacted under this section unless it be reserved for the signification of Her Majesty's pleasure, or contain a suspending clause, providing that such Act or Ordinance shall not come into operation until Her Majesty's pleasure thereon has been publicly signified in the British possession in which it has been passed.—[This seems to be necessary to fill a gap in existing statutes.]

40.—*Power, by Consent, to Apply to Foreign Countries Provisions of the Merchant Shipping Acts, 1854 to 1875, as to Shipping Casualties.*—Whenever it has been made to appear to Her Majesty that the government of any foreign State is desirous that all or any of the provisions of the Merchant Shipping Acts, 1854 to 1875, relating to inquiries into and investigations of shipping casualties happening within the limits of the United Kingdom, shall extend to cases where any such casualty happens to a ship or boat of that State in any place without the limits of the United Kingdom, Her Majesty may, by Order in Council, declare that such of the said provisions as are specified in the order shall, subject to the limitations, if any, contained in the order, extend to such cases accordingly, and thereupon, so long as the order remains in force, the provisions so specified shall, subject to the said limitations, extend to such cases in the same manner as if the casualty had happened within the limits of the United Kingdom.—[This seems to be very necessary. At present the receiver conducts inquiry (takes depositions) in cases of wrecks of foreign ships within the limits of British jurisdiction. The clause is of interest to foreigners and of no direct interest to British shipowners.]

LIABILITY OF SHIPOWNERS (PART IX. OF MERCHANT SHIPPING ACT, 1854).

41.—*Liability of Owners of Unseaworthy Ships.* See 25 and 26 Vict., c. 63, s. 54, and 34 and 35 Vict., c. 110, s. 11.—Where, by reason of a ship having been sent to sea in an unseaworthy condition, any loss of life or personal injury is caused to any person being carried in the ship, or any damage or loss is caused to any goods, merchandise, or other things whatsoever on board the ship, then, notwithstanding the provisions of section fifty-four of the Merchant Shipping Act Amendment Act, 1862, the liability of the owner of the ship in respect of the loss, injury, or damage, shall be unlimited, unless he proves that he and his agents used all reasonable means to make and keep the ship seaworthy, and was and were ignorant of her unseaworthiness, or that her going to sea in an unseaworthy condition was under the circumstances reasonable and unavoidable. Any agreement, provision, or stipulation having for its object or effect to avoid or limit the liability of a shipowner in the cases referred to in this section shall be void.—[This section is the one on which we foretell the most discussion. The liability of the owner is to be unlimited in cases of unseaworthiness of the ship. This section is evidently founded on a direct recommendation of the Royal Commission. Chap. 2, pars. 32 and 34, page 661. It is clear that many shipowners would rather agree to a compulsory survey and a compulsory load-line (Mr. Plimsoll's scheme) rather than agree to the provisions of this new section. If Mr. Plimsoll's scheme be adopted, the shipowner will only

have to prove that he had had his ship surveyed; and, however badly loaded, that she was not deeper than his white patch. If, on the contrary, this new section is adopted, the shipowner will have to prove very much more—viz., that he and his agents did their best to keep her safe, and in all respects seaworthy. On this section, therefore, the whole question of personal responsibility *versus* surveys and no responsibility can be well fought out. It is very curious that Mr. Plimsoll, who is anxious to save the lives of sailors at sea, should insist on a course that would leave them unprotected, if the shipowner had previously managed to pull his ship through some survey in port, and had protected himself by not loading his ship down beyond a certain point, which the Royal Commissioners show it is impossible to fix correctly by any statutory rule.]

42.—*Liability of Owner for Death or Injury of Seaman caused by Unseaworthiness.*—It shall be the duty of every owner of a ship, as between himself and the crew of the ship, to make and keep the ship seaworthy, and, if by reason of the neglect or default of the owner of the ship, or of any of his agents, in making or keeping the ship seaworthy, any member of the crew is killed or injured, the owner of the ship shall be liable in damages for the death or injury.—[This is also in accordance with the recommendation of the Royal Commissioners. It evidently does not mean to hold the shipowner responsible if one seaman causes death or injury to another, but seems to mean that if an owner lets his ship get out of repair, or allows say rotten ropes or defective boilers or compasses or side lights to be on board his ship, and any one in the ship is killed or injured in consequence, then the owner is liable to an unlimited extent.]

43.—*Application to Scotland.*—In the application of this Act to Scotland—(1.) The term “sheriff” shall include “sheriff substitute.” (2.) The term “registrar of the court” shall mean “the senior principal clerk attached to the first division of the Court of Session.” (3.) The term “attending on subpoena before a court of record” shall mean “attending on citation the court of judicary;” and (4.) the Queen’s and Lord Treasurer’s Remembrancers shall perform the duties of a master of one of the superior courts.

44.—*Repeal and Saving.*—On and after the passing of this Act, the Acts mentioned in the second schedule to this Act shall be repealed to the extent mentioned in the third column of that schedule, and on and after the first day of January, one thousand eight hundred and seventy-six, there shall be repealed section five of the Merchant Shipping Act, 1871, section three of the Merchant Shipping Act, 1873, and section four of the same Act, from “The record” to “lowest part of the side,” both inclusive; but this repeal shall not affect—(1.) Anything duly done before this Act comes into operation. (2.) Any right acquired or liability accrued before this Act comes into operation. (3.) Any penalty, for-

feiture, or other punishment incurred or to be incurred in respect of any offence committed before this Act comes into operation; or, (4.) the institution of any legal proceeding or any other remedy for ascertaining, enforcing, or recovering any such liability, penalty, forfeiture, or punishment as aforesaid.

SCHEDULES.

FIRST SCHEDULE.

Regulations as to boats and other equipments to be carried by ships surveyed by the Board of Trade:—

1. Every ship of 800 tons net register or upwards shall carry boats according to the following scale:—

Number of Net Register Tons.	Number of Boats.	Cubic Contents.
2,000 and upwards	4 2 4	3,120 1,170 1,856
Total	10	6,146
1,500 to 2,000... ..	2 4 2	1,560 1,856 1,170
Total	8	4,586
1,000 to 1,500	2 2 2	1,560 928 660
Total	6	3,148
700 to 1,000	2 2 2	1,170 928 517
Total	6	2,615
500 to 700	2 2	1,170 660
Total	4	1,830
300 to 500	3	1,500

2. Every ship of less than 800 tons net register shall carry boats of such number and description as the Board of Trade may deem requisite.

8. Provided that—

(a.) No ship shall be required to carry boats having an aggregate

capacity of more than seventeen cubic feet (as ascertained by these regulations) for each "statute adult" on board the ship.

(b.) Where the aggregate capacity of the boats carried by a ship is less than seventeen cubic feet (ascertained as aforesaid) for each "statute adult" on board the ship, she shall carry such additional boat or boats, or other appliances, as the Board of Trade may from time to time by general instructions, having regard to the proper working and handling of the ship, direct.

4. Every boat required by these regulations to be carried, must be fitted as a life-boat, and must have for every seventeen cubic feet (ascertained as aforesaid) of her entire contents, one and a-half true cubic feet of air space enclosed in compartments, fitted and arranged in such manner, and constructed of such material, as the Board of Trade may from time to time by general instructions direct.

5. For the purpose of these regulations, a boat shall be deemed to contain such number of cubic feet as will be arrived at by multiplying her length over all by her extreme breadth, and by her inside depth amidships.

6. The Board of Trade may allow rafts or other appliances to be substituted for any of the boats required by these regulations to be carried.

SECOND SCHEDULE.

Session and Chapter.	Title.	Extent of Repeal.
11 W. 3.c. 7.	An Act for the more effectual suppression of piracy.	Section seventeen.
17 & 18 Vict. c. 104.	The Merchant Shipping Act, 1854.	Sections one hundred and seventy-five, two hundred and thirty-nine, and two hundred and forty-one, sub-sections (1) and (2) of section two hundred and forty-two, sections two hundred and forty-three, two hundred and forty-six, two hundred and forty-seven, two hundred and forty-eight, two hundred and ninety-two, two hundred and ninety-three, two hundred and ninety-four, four hundred and thirty-two, to four hundred and thirty-eight, both inclusive, four hundred and forty-eight, and four hundred and forty-nine.
18 & 19 Vic. c. 119.	The Passengers' Act, 1855.	So much of section twenty-seven as relates to boats and life-buoys.
25 & 26 Vict. c. 63.	The Merchant Shipping Act Amendment Act, 1862.	Section eleven, and section twenty-three, except sub-section (1).
31 & 32 Vict. c. 129.	The Colonial Shipping Act, 1868.	Section three.
36 & 37 Vict. c. 85.	The Merchant Shipping Act, 1873.	Sections six and fifteen.

OUR COLONIES.—VII.

THE VEGETABLE FIBRES THEY PRODUCE.

IF there is one thing more than another on which our commercial greatness is based, it is the activity and importance of our numerous factories, and of these the principal are certainly those engaged in textile manufactures. For the raw material, the animal and vegetable fibres, to keep them in activity, we are necessarily dependent on foreign countries and our distant possessions. Neither our climate nor the extent of our insular territory are suited to the efficient supply of our wants.

The flax production of Ireland goes but a small way to meet our requirements, and our cordage and textile materials have all to be imported. The extent and importance of this foreign supply may be judged of by the following figures of imports in 1874 :—

			Value.
Raw cotton, cwts.	... 14,062,075	...	£50,936,509
Flax	... 2,373,993	...	5,544,991
Hemp	... 1,241,115	...	2,211,433
Jute	... 4,299,336	...	3,561,289
Silk, raw, lbs.	... 5,943,438	...	5,017,646
Sheep's wool, lbs.	... 338,800,481	...	20,489,055
Alpaca and goats' hair, lbs.	12,200,087	...	1,603,764
			<hr/>
			£89,364,687

By adding to these, coir-yarn, cordage, New Zealand flax, and various coarse miscellaneous fibres, we have an aggregate sum paid yearly for textile materials exceeding ninety millions sterling !

Now it is of the greatest importance that we should be as much as possible independent of foreign supplies for these ; and, fortunately, we have countries with suitable climates under our own rule capable of producing all that we require, and our possessions are making steady and active efforts to furnish us yearly with larger quantities. It is only a question of labour and selling price. For coir, jute, and some other useful fibres, we are entirely dependent on India. Of cotton we also receive nearly three and three-quarter million hundredweights from India, and this production could be largely extended, while many of our possessions in Africa, Australia, and the West Indies, could furnish considerable supplies of this and other fibres. From India we get but little hemp (58,485 cwt. in 1874), but Canada, Australia, and some other of our possessions, could send us supplies of both hemp and flax, and relieve us to some extent of

our large dependence on Europe. The plant which furnishes the vast proportion of the so-called hemp exported from India is the Sunn (*Crotolaria juncea*). The fibre is used locally for making rope, sack-cloth, nets, and twine. Rope made of it is sold in the bazaars at five pounds weight for a shilling.

India and our Colonies even now send us as much raw cotton as our whole supplies imported a quarter of a century ago. Then we were almost entirely dependent on the United States for this essential fibre for keeping our cotton mills going. Besides our large home consumption, be it remembered, we supply nearly all the world with cotton manufactures. The average value of our exports the last three years having been £61,000,000, and to this must be added linen and jute yarn and manufactures, £10,754,158; cordage, £360,756; silk manufactures, £2,100,000; and silk yarn, £1,000,000; woollen yarn and manufactures, £28,354,000. After this summary, who will deny the importance of our textile industries.

But it should also be considered how many persons these industries directly and indirectly employ and support in the manufacture and transport, to say nothing of the shipping tonnage for which they furnish profitable freight.

There are no very recent factory statistics available for reference; the latest published collective return is for the year 1870. This document furnishes the following figures as to factories of each kind, and the operatives directly employed in them:—

			Factories.		Operatives.
Cotton	...	...	2,483	...	449,087
Flax	...	...	500	...	124,772
Hemp	...	...	35	...	2,150
Jute	...	...	63	...	17,570
Lace and Hosiery	...	...	353	...	18,062
Rope-making	...	...	24	...	1,784
Silk	...	...	696	...	48,124
Wool	...	...	1,829	...	125,130
Worsted	...	...	630	...	109,557
Shoddy	...	...	120	...	8,816
			6,793		900,052

At the various International Exhibitions there have been large and magnificent displays of fibres shown from our various Colonies and India, especially from Jamaica, Trinidad, Ceylon, Natal, Mauritius, and Australia. It is true that of the numerous fibres which are dispersed abundantly over almost every portion of the globe, comparatively few

are capable of taking the place of hemp and flax, and still fewer of cotton; nevertheless, some excellent substitutes for them have already been found. The production of "cotton" from hemp and flax has occupied attention since the middle of the last century in various countries, and it has been effected by several processes, both with economy and complete success. Cotton may thus be obtained from fibres which would otherwise be too coarse for the finer textile fabrics.

No description of raw produce is more industriously sought after by manufacturers than vegetable fibres, and India is a field to which they have long and hopefully directed their attention. Undoubtedly the vast resources of our Indian Empire in this branch are as yet but partially known, and there is good ground for believing that a large number of fibrous plants grow with luxuriance, which would yield a material commanding a constant demand in western markets, if a large and regular supply could be secured.

The inconvenience of depending for the greater part of our supply of cotton on any one country, renders it desirable to consider what amount may be reasonably expected from others, if we take the proper means to instigate them to cultivate it. We are, in reality, independent of the United States, since our Indian possessions would produce, at least, half of what we require, Brazil, Egypt, Italy, and Algeria, the remainder. But the question arises whether we cannot obtain all we want, in time, from our own possessions. India at present produces about 2,800,000 bales, each averaging 400 lbs.; of this quantity Great Britain receives 1,871,000 bales. China and the Continent divert 805,000 bales; and about 622,000 bales are locally consumed. There are 18,000,000 of acres under culture with cotton in India, and the average yield is from 50 to 80 lbs. of cotton per acre. In recent years, the Government of India has paid much attention to the improvement of cotton cultivation. Attempts have been made to introduce foreign varieties, but the result has not been satisfactory. Endeavours have, therefore, been made to improve the indigenous plant, which, though inferior to its American rival, produces a very fairly satisfactory cotton. Of late years Indian cotton has become popular among the Continental spinners. The opening of the Suez Canal has much facilitated communication between India and the Mediterranean ports. The trade in this direction has largely increased, and there seems to be reason to hope that if a standard of cotton, as high as that grown in most parts of the Bombay Presidency and Central India, can be maintained, the demand for Indian cotton, on both the Continent of Europe and in the United Kingdom, will not fall off.

Besides India we have other considerable sources of supply of cotton in our Colonies, where the selling price encourages production, and

available cheap labour can be had. The West India Islands and British Guiana could produce a great deal; Natal and Queensland grow excellent cotton, and our new possession of the Fiji Islands is noted for the beautiful quality of the cotton grown there. A stimulus to extended production either in demand or enhanced price is all that is required to make us thoroughly independent of foreign nations for our supply of cotton.

Of all Indian fibres, hemp, jute, and sunn are the most remunerative, as they are easily cultivated and appear to thrive in most parts of the Presidencies. Though not so strong as flax and its substitutes, they are suited for cordage, coarse cloth, and other manufactures. Further experiments might also be tried on the barks of some other promising plants, as the species of *Hibiscus*, *Abutilon*, *Abelmoschus*, *Althaea*, *Ficus*, *Bauhinia*, *Grewia*, and *Wrightia*. A point of some importance which requires to be determined is, whether tanning or tarring is the better mode of preserving cordage.

The *Hibiscus cannabinus* furnishes a portion of the so-called "brown hemp," exported from Bombay. It is readily cultivated, and with more attention to its preparation is calculated to compete with jute. The fibre of *Sida rhomboidea* is very similar to jute in appearance, but it is considered to be intrinsically so superior to jute that it is worth from £5 to £6 more per ton.

Jubbulpore hemp (*Crotolaria tenuifolia*) is pronounced by experienced makers of rope equal to the best Russian hemp. It is in good demand at Calcutta. Mirzapore is at present the nearest place of export. The great length of time in getting down bulky produce from Central India, and the enormous expense of transport have hitherto prevented its being sent to England, but all this will be overcome the moment the railway line from Bombay to Jubbulpore opens, when the hemp can be landed at Liverpool in as many days as it now takes weeks, by country carts and native boats, to convey it from the station to Calcutta, and there is no doubt that in a very few years hemp, and also flax, will become large articles of export from the Sangor and Nerbudda territories.

Kangra hemp (*Cannabis sativa*) grows spontaneously and in abundance everywhere in the submontane tracts, but is cultivated for the fibre only in the eastern portion of the Kangra, and in the Simla hills. Some years ago an experimental consignment of two tons of Himalayan hemp was valued in the English market at from £80 to £32 per ton, and within the last year or two larger consignments of hemp have been despatched from India at Government expense by request of the Dundee merchants.

Jute obtained from two species of *Corchorus* is one of the Indian fibres which, commercially, has risen to the greatest importance in the course of a short period. In the early part of this century jute was unknown

in this country, except in the form of gunny bags used in the importation of sugar, rice, and other Indian products. It had to make its way slowly at first in face of strong opposition. Manufacturers had a prejudice against it, and prophesied nothing but failure. Aversion and prejudice, however, have long since disappeared. Its capabilities for employment in such fabrics as sacking, matting, and carpeting are now established, and a limit can hardly be set to the development of the trade. In 1872, there were 921,000 acres under culture with jute in Northern Bengal and the eastern districts of Bengal. The total exports of jute and jute cuttings in 1872 slightly exceeded 2,000,000 bales. The imports of jute into this country in the last three years have averaged four and a-quarter million hundreds weight, valued at more than three and a-half million sterling per annum. The United Kingdom receives three-fourths of the shipments from Calcutta. But this does not represent the whole of the production, for, besides the local consumption, there are also exported from Calcutta upwards of twenty-eight and a-half million pieces of gunny cloth for baling and bags made of it, worth another million pounds.

The imports of jute into the United Kingdom have risen in less than forty years from 500 tons per annum to upwards of 225,000 tons. The jute fleet between Calcutta and Dundee is perhaps the largest fleet of sailing vessels running between any two ports, and the trade of the city has proportionately increased with the advance of the jute manufacture. The immense and rapid development of the jute trade and manufacture thus far shows what can be accomplished with a low-priced and plentiful material, which has the further advantage of being produced only in our own possessions. It is not always the excellence in fibre that is necessary to recommend a fibrous plant as economically valuable. The principal value of jute is that it can be easily prepared, as it should always be the endeavour to liberate the fibre by mechanical means, rather than by chemicals or heat, from the adherent cellular fibre.

The fibre, or husk of the cocoanut, generally known as coir, is already so extensively used in England that from Cochin and Ceylon there is yearly imported yarn, cordage, and fibre, to the value of nearly £200,000, principally to England. Its character has long been established in the East, and is now so well known in Europe as one of the best materials for cables on account of its lightness, elasticity, and strength. It is durable also, and little affected when wetted with salt water. Numerous instances have been related of ships furnished with this light, buoyant and elastic material riding out a storm in security, while the stronger made though less elastic ropes of other vessels have snapped in two, and even chain cables have given way. Indeed, until

chain cables were so largely introduced, most of the ships navigating the Indian seas were furnished with coir cables.

In this country it is employed in the manufacture of cordage, yarns, sheep netting, floor matting, door-mats, stair carpets, instead of hair for stuffing mattresses, as a substitute for bristles, in scrubbing, nail, and other brushes. It has gradually superseded for many purposes the coarser kinds of hemp; and it has so far the advantage over many other fibres that the supply appears ready to augment as rapidly as the demand can increase.

It is somewhat singular that, looking at the quantity used and the value of the so-called Manila hemp (the produce of a wild plantain, the *Musa textilis*, in the Philippines), no efforts have been made to introduce the plant into India. It has been grown in Queensland, but no expense or trouble ought to be spared to introduce suckers and seeds of this most valuable plant in quantity into India, Australia, Guiana, and the West Indies. There need be no fear of overstocking the market with fibre or reducing its present high price, when we know that the consumption, as well as the price, of this material is daily on the increase, and likely to continue increasing for many years to come. Our imports of Manila hemp for cordage now exceed 276,000 cwt., valued at £70,379.

One of the most promising fibres of the future is certainly the Rhea of India and the East, for in strength it exceeds the best hemp, and in fineness it rivals the superior kinds of flax. Its culture is well known to the natives of Assam, and it is grown in the districts of Rungpore, Dinajpore, Tenasserim, and Burmah. It can be produced and sold with profit at as cheap a rate as Russian hemp, and if any machine could be employed for facilitating the separation of the fibre from the outer bark and the woody part of the stalks, it would soon undersell all other fibres, as from four to five crops of fibre can be obtained within the year from the same plants.

As soon as arrangements have been effected for its production, along with that of other species of nettle, which abound in various parts of India, it is anticipated that fibres from this class of plants will eventually occupy a position second only in importance to that of cotton and flax. Late experiments have shown that the fibre of the Rhea can be turned to account for the manufacture of a variety of fabrics of a very valuable and useful description, and its extended cultivation in India is worthy of every attention and encouragement.

Dr. Forbes Royle states that when tarred and twisted into five-inch rope, and carefully tried with respect to strength, it bore above nine tons weight before breaking. When twisted into small rope, it was also reported to be fifty per cent. better than similar rope made with Russian hemp. Fishing lines made with it are also wonderfully strong.

Although the Rhea fibre will prove to be too valuable to be only employed for rope-making, still there are many wild forest species of the nettle tribe that may be so applied. From experiments made by Messrs. Huddart and Co., of Limehouse, some years ago for the India Office on rope of four and seven-eighths inches with forty-four yarns to the strand, the various species of Rhea were tested from 19,032 up to 20,488 pounds in strength. The jute and sunn fibres are separated from the woody stems by the process called water-retting, in a similar manner to that employed in the preparation of the true hemp and flax, a process by which the removal of the fibre from the stems is rendered of easy accomplishment. The nettles, on the contrary, require a tedious manipulation. The bark or epidermis of each individual stem must be carefully scraped off the fresh-cut plant, a most tedious and delicate operation.

The Indian Government, a few years ago, offered a premium of £5,000 for a machine capable of cleaning the valuable stems of the Rhea plant, at a cost of £15 per ton, and admitting the sale of the fibre in the English market at £50 per ton. Although several machines have been submitted for competition, none have yet met the requirements.

This nettle plant has been introduced with success into several of our African and West Indian Colonies. In Jamaica it has produced at the rate of 300 lbs. of fibre per acre at each cutting, of which five are yielded annually, thus making an aggregate of 1,500 lbs. per acre yearly. The fibre in the rough state is valued at £40 per ton in London; but the prepared fibre, according to the above yield, would be 10 cwt. per acre annually, worth £80 a ton.

In Akyab and Burmah, the bast or inner bark of many large trees (apparently *Sterculias*) is much employed for making cordage for boats and strong nets; very good cables are also made of it. They are strong and enduring in their nature, and some of them have been tested with satisfactory results, but they are coarse and ill-prepared, so that, in their present condition, they would scarcely command a price in the English markets. The ordinary sugar packages of the Mauritius, of which several millions are used, are made of the leaves of the *Vacua* palm (*Pandanus utilis*). Many of the so-called aloe plants (*Agaves*) furnish useful fibre in the Colonies, and for local purposes numerous barks, strong grasses, canes, and vegetable fibres are used.

The Mahoe fibre (*Hibiscus elatus*) of the West Indies furnishes a very strong but coarse fibre, which is used for making cordage, coffee-bags, &c. In the Bahamas, rope and cordage is made from hemp obtained from the leaf of the *Yucca serrulata*. The rattan canes (species of *Calamus*), trailing palm stems, of which such large consumption is made for chair and basket work, coarse cables, &c., and numberless other

uses in Europe, might well come under our consideration in treating of fibres, there being a large export from India.

Although we do not at present receive supplies of fibrous substances from many of our Colonies, their capabilities are fully equal to any future demand we can make upon them. Canada, Tasmania, parts of Australia, and New Zealand, can grow and supply us with flax and hemp. From Australia we already receive about 16,000 cwt. of flax, valued at about £28,000, and we may look for yet larger supplies from New Zealand of its indigenous useful native hemp.

The most interesting and valuable of the fibrous plants of New Zealand is the *Phormium tenax*, which yields the so-called "flax" from which so much has frequently been expected as an article of export, and on which the capital and skilled labour of the Colony could be largely employed. For various reasons, however, although large quantities of the fibre of this plant, prepared by native labour have been exported, and its value in the home market fully established, no attempt to employ machinery for its production has yet been a commercial success. Many processes, both chemical and mechanical, have been tried by the colonists and by projectors in England, Belgium, and France, for adequately preparing this fibre, but hitherto complete success has not been attained, in separating the fibre from some particles of a gummy nature, which render it brittle and harsh of texture when dried and packed, so that it is as yet considered inferior to some of the other commercial fibres employed.

Phormium may perhaps be used in the manufacture of articles that do not require bleaching, but its principal use will always be for rope, in which manufacture its great strength will make it, when properly prepared, superior both to Manila and hemp. Of course, if the gummy cement is left in the fibre, decomposition will sooner or later take place, and the rope will rot if kept wet for any length of time, but in this respect it ought to be no worse than Manila or hemp ropes, in both of which the cement is left in. The rotting of Phormium, especially in sea water, would be a most fatal objection to its coming into general use, and it is of the greatest importance that the subject should be carefully inquired into, and, if found to be true, that, both with the hand-washed and soaked fibre every endeavour should be made to discover means for preventing it. It does not, however, appear that tarred New Zealand rope rots sooner than tarred European rope. Another objection—that New Zealand rope easily chafes, is one which it is to be feared we cannot cure, as it arises from the gradual separation of the ultimate fibres from one another; but the more the cement is removed or weakened by rotting, boiling in water, or in alkali, the more it will be liable to chafe, and the greater the diameter of the rope the less will be the proportionate wear.

It is difficult, however, to see why New Zealand rope should chafe more than Manila.

The Auckland papers state that a rope of immense size, supposed to be the largest that has ever been manufactured in New Zealand, has been made at Lloyd's Steam Rope Works, Auckland. The rope, which is 18 inches in circumference and 90 fathoms long, was ordered as a capstan rope by the United Pumping Association, at the Thames, and was completed on the day following that on which the order was given. It took the whole of the power of Mr. Lloyd's engine to drive the machinery to make the rope, which, when it left the works, weighed 1 ton 1 cwt. 1 qr.

There appears to be several different varieties of the Phormium plant. The leaves vary from three feet to fourteen feet in length, and from half-an-inch to five inches in breadth in the widest part of the leaf. The average length of the ultimate fibre of Phormium is nearly twice that of Manila or Sisal hemp, while the average diameter is not much more than half that of Manila, which again is much less than Sisal. The fibres are exceedingly strong, indeed, more than double the strength of ordinary flax and considerably stronger than Russian hemp. Thus, common flax will bear a strain of $11\frac{1}{2}$ lbs., Russian hemp, $16\frac{1}{2}$ lbs., and Phormium, $23\frac{1}{5}$ lbs. Dr. Lindley gives the comparative strength as follows :—Phormium 23, hemp 16, flax 11 lbs. To the natives this plant was almost as valuable and necessary as the cocoa palm is to the savages of the South Sea Islands, or as the bamboo is to the Chinese. With the leaves cut into strips, they bound together the framework of their houses and the defensive palisading of their paha. Clothing, baskets, fishing nets and lines, and sails for their canoes were manufactured from the fibre ; whilst from the seeds and roots of the plant they extracted useful medicines. Even in its roughest state this plant is most useful to the colonist or the traveller. It abounds everywhere except in the thickest forest, and a leaf cut green, either whole or split into the required breadth, serves every purpose for which string might be necessary, from the repair of a saddle-girth, or stirrup-leather, or the bandaging of a wounded limb to the replacing of a worn-out brace, knapsack-strap, whiplash, or bootlace.

Although India and our Colonies possess a vast number of important and useful fibre yielding plants, comparatively few of them are as yet objects of European commerce, or known to the manufacturers of cordage or of textile fabrics in Europe. Professor Bernardin, of the College of Melle, Belgium, published recently a list of no less than 550 plants yielding fibres, hence we see how wide a scope there yet is for experiments in obtaining from some of these, a vast and practically inexhaustible supply, of an article we have a large demand for, and the use of which produces so many

and great blessings. We have, it is true, utilized to some extent metal wire for standing rigging, and chain-cables for our ships, but we cannot supersede altogether vegetable fibres for ropes and hawsers, and the sails must still be made of canvas.

In running over the pages of the numerous volumes that have been written on fibrous substances, and in inspecting the collections of the Kew Museum, one cannot fail to be struck with amazement at the number and varieties of the fibrous plants which Nature has given us, and scarcely less at the apparent neglect with which they have been treated, notwithstanding the large demand there has for many years been for textile materials, above what have found their way into our markets. We see, however, that our various possessions beyond the sea present for our acceptance and use a profusion of vegetable substances, most of them capable of being rendered highly useful, and so various in their qualities, as to furnish materials for almost every species of manufacture in which strength, durability, and flexibility are required, from the stoutest rope and canvas to the finest and most delicate tissue. Even the coarser fibres of the tropics are capable, by a proper course of treatment, of far greater usefulness than they have hitherto yielded; while scores of varieties of a finer description now scarcely usable for any textile purpose, possess qualities which, if they were properly freed from the resinous substances by which they are more or less laden, are available for being wrought up into fabrics quite equal to the costliest productions of the loom. Several of the plantain tribe and Bromelia family are instances.

We have confined our consideration in this paper to the vegetable fibres for which we are so largely dependent on our Colonies and possessions beyond the seas, restricting ourselves to those forming articles of export, without considering very many of minor importance and chiefly of local use, but which may hereafter develope into articles of commerce when obtainable in quantity and well prepared. The subject of our imports of animal fibres—wool, hair, silk, &c.—we must reserve for another article.

FOG-SIGNALS.—The War-Office are engaged in making some experiments for the Trinity Board as to the best form of gun for signalling in fog. In the course of the experiments, it was found that the explosion of gun cotton produces a louder sound than gun powder; and, consequently, further trials are now to be made with gun cotton in reference to its manipulation and effect.

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DISMASTED SHIPS.

THE frequent dismasting of large iron sailing ships during the past year has recently been made the subject of a most able memoir by the talented Chief Surveyor of Lloyd's and his assistants. They give a list of the vessels with their gross tonnage and date of build, which we subjoin, adding the proportion of depth to breadth, a feature of the case to which we shall further on have occasion to refer :—

Ship's Name.	Date of Build.	Gross Tonnage.		Depths in Breadth.
<i>Loch Ard</i>	1873	.....	1,698	..... 1·65
<i>John Kerr</i> .....	„	.....	1,864	..... 1·78
<i>Cambridgeshire</i> .....	„	.....	1,766	..... 1·69
<i>Chrysieme</i> .....	„	.....	1,885	..... 1·76
<i>Loch Marie</i>.....	„	.....	1,657	..... 1·68
<i>British Admiral</i>.....	„	.....	1,808	..... 1·75
<i>Norval</i> .....	„	.....	1,503	..... 1·69
<i>Rydal Hall</i>	1874	.....	1,864	..... 1·77
<i>Duchess of Edinburgh</i>	„	.....	1,766	..... 1·7
<i>Dallam Tower</i>	1866	.....	1,499	..... 1·61
<i>Roopareil</i>	1868	.....	1,097	..... 1·62

The *Loch Ard* was dismasted twice.

They remark that of these, nine are new vessels exceeding 1,500 tons gross, and were dismasted on their first voyage. It is also noted that they were built by experienced builders in different parts of the country, including Liverpool, the Clyde, the Tyne, and the Wear. We presume from what is said that all, or nearly all, were classed either in Lloyd's or the Liverpool Registry. As seven of them were dismasted on voyages to Australia it would seem that the report of the Melbourne surveyors, who saw the vessels on their arrival, would be of some value. We quote the causes assigned by them for the disasters :—

- “ 1.—That the vessels were overladen.
- “ 2.—That the stowage of iron was too low, thus making the vessels too laboursome.
- “ 3.—That the vessels were over-masted, the masts being too taunt, considering the spread of rigging and weight of yards.
- “ 4.—That sufficient care had not been taken in staying the masts, or in the strength of head-gear.
- “ 5.—That the masts were not stiff enough at the deck, and in one case that the material and workmanship were defective.”

Truly, as Sir John Falstaff says, we have here "reasons as plenty as blackberries," with such an *embarras de richesses* our only difficulty is to choose. The Chief Surveyor of Lloyd's very properly disposes of the first of the alleged causes of disaster, stating that it is certainly known that some of the ships were not overloaded, and that the probability is against vessels of this class having too much put into them, "in view of the fact that no class of vessels are loaded with greater uniformity as to height of freeboard and surplus buoyancy than these large sailing vessels outward bound." In this we quite concur with Mr. Martell, and must express our regret that surveyors of shipping should be so far led away by the remarks of outside agitators, who say that almost every evil may be traceable to rottenness or overloading, as to jump at the conclusion that because a large new iron ship came to grief she must have been overloaded. We cannot suspect that the class of firms to whom these sailing ships belong would go to the expense of having vessels built with fine lines, and, as a consequence, less stowage room compared with their principal dimensions, in order that they may get great speed out of them, and then unwisely load them down so as to lose all that had been gained.

With regard to the second alleged cause of disaster, it is remarked that excessive stability due to a low centre of gravity is very likely a source of evil in these cases. It is said :—"This is rendered probable from the fact that the form of modern sailing ships is one conducive to great stability, and their being very heavily rigged and intended for high speeds, makes it almost certain that any error of stowage, at least on the first voyage, before any experience had been acquired with the vessels for guidance, would be in the direction of excessive stiffness." A comparison is then made between the forms of sailing ships now and formerly. It is said that large sailing ships now have greater rise of floor and somewhat more beam in proportion to depth than formerly, thus giving the vessel great stability of form, causing her if loaded as another kind of ship of the same size would be, to have excessive stability, and to be consequently very labourousome. It is remarked further on in the paper that "a tendency is apparent to attribute dismasting to a mere question of the proportion of beam to depth in the vessel, without regard to rise of floor and form. . . . whereas with the same beam and depth, an ordinary vessel might be made either full or fine, stiff or tender, and the proportion of beam to depth remain unaltered." As is indicated in the memoir before us, excessive stiffness may be due to one of two causes—stability of form or a low centre of gravity in the cargo. Is it the fact that modern sailing ships differ from those of earlier construction chiefly in having more rise of floor? and, secondly, in having greater beam for the depth of hold? We have taken the trouble of comparing the dis-

masted eleven, more particularly the nine built within the last two years, with ships of the same size built ten years ago. We find first, as everybody knows, that a very much larger proportion of the ships built now are fine ships. The usual way of estimating the fineness of ships is by the proportion that the product of the length, breadth, and depth, bears to the volume. The latter quantity is divided by the former, and the decimal fraction thus obtained is called the factor of fineness. If the product of the inside length, breadth, and depth of these vessels be divided by the under-deck register tonnage, in only one case do we obtain a factor exceeding $\cdot 7$, three give $\cdot 7$ almost exactly, and the lowest factor so obtained is $\cdot 67$. The average factor of sailing vessels now built probably is about $\cdot 7$; of vessels built ten years ago it was nearly $\cdot 75$. The difference is not, however, caused so much by rise of floor as by fineness in the water lines. Most of our readers are aware that bluff bows were the rule with sailing vessels until the introduction of the clipper ships, and that it was some years more before ordinary sailing ships were built with the fine lines which they now have. Comparing fine ships built now, not with clipper ships built ten years ago, but with the finer-formed ordinary trading ships turned out at that period, we can certainly affirm that in whatever other respects the fashion has altered, it is not in the direction of greater rise of floor. In making the comparison we have proceeded as follows:—The light water line of an ordinary sailing ship is a little below half the depth of hold, and at the same point the vessel usually attains her greatest breadth. We think, then, a fair measure of the rise of floor is the proportion borne by the area of the midship section up to this point, to the rectangle of the extreme breadth into the depth from the starting point of the underside of the garboard plating. This ratio, in the vessel of the nine in which it is least, is expressed by the decimal fraction $\cdot 79$. We have looked over the sailing vessels built on the Clyde and at Belfast during the latter half of 1864, of over 1,000 tons gross. They number twelve in all; and of them, one gives the ratio $\cdot 88$, another $\cdot 81$, and a third $\cdot 69$ —that is, one-fourth of the ships in 1864 had as much rise of floor as the finest ships have now, and one had very much more than any of them. On the other hand, the element of stability of form, which Lloyd's surveyors put in the subordinate place, is really the important feature in which modern sailing ships differ from those built ten years ago. We have given the proportion of depth to breadth of the vessels which have been dismasted; it will be seen that the average of the first nine—that is, those built within the last two years—is $1\cdot 719$. Taking now the twelve large ships built in 1864, we find that the average proportion, depth to breadth, is as 1 to $1\cdot 58$: the vessel specially mentioned, as far exceeding in rise of floor all the modern examples, shows a ratio of 1 to $1\cdot 6$. Even the

clipper ships had much less breadth in proportion to depth than sailing vessels of recent construction. We give some well known examples, taking all the decidedly clipper ships, with which we are acquainted, produced in 1863 and 1864—

Ship's Name.			Gross Tons.		Depths in Breadth.
<i>Belted Will</i>	...	...	812	...	1.56
<i>Serica</i> ...	...	...	708	...	1.59
<i>Taeping</i>	...	...	767	...	1.56
<i>Eliza Shaw</i>	...	...	696	...	1.67
<i>Yan-Tzee</i>	...	...	688	...	1.69
<i>Pak Wan</i>	...	...	795	...	1.7
<i>Black Prince</i>	...	...	750	...	1.79
<i>Ethiopian</i>	...	...	888	...	1.71
<i>Ariel</i> ...	...	...	858	...	1.61
<i>Ada</i> ...	...	...	686	...	1.67
<i>Sir Launcelot</i>	...	...	886	...	1.6
<i>Taiting</i>	...	...	815	...	1.57

The average is 1.648. We thus see that the vulgar notion as to the respect in which the form of ships has altered is the right one. We cannot, however, believe that the alteration of form has so modified the conditions of the question as to afford a valid excuse for errors in stowage. That such errors are frequently made we readily believe, and we hope that the valuable memoir before us will be the means of so directing attention to the subject that there may be less of them in future. As regards the scientific aspects of the question, it is much to be regretted that while in the Royal Navy there is the fullest information as regards the actual stability of ships of every class, we have not, in dealing with merchant ships, any reliable data for a basis on which to frame rules of stowage; while the position of the centre of gravity of every ship in the Royal Navy, or, at least, one ship of every distinct design, is found by calculation and experiment, so far as we are aware, not one similar experiment has been made on a merchant ship of late years. If a number of such experiments were made on first-class sailing ships, and data thus obtained as to the metacentric height, in each case when a ship behaved well in bad weather, it would be known what metacentric height was desirable for such ships, and new vessels could be stowed accordingly. This is the only way in which past experience can be made available in the stowage of new ships. Stowage at present is done by rule of thumb; it might be regulated by fixed and well defined rules if only we had the data on which alone such rules can be framed. Before leaving this part of the subject, it may be as well to remark upon a change which has taken

place in the designs of ships, and which has apparently escaped the notice of the writers of the memoir before us. Sailing ships built ten years ago differed from those for similar trades which are now built, in, as we have said, having less breadth for their depth, and in having finer water lines. They also differed in having more tumble-home. A common type of ship at that period attained her greatest breadth below the light water line, and immediately began to tumble-home; now if there is tumble-home it starts higher up, but very frequently there is very little, and often none at all. The effect of this form upon the stability is very great when the vessel is inclined under press of sail. The stability increases rapidly as the angle of inclination increases, and if, under such circumstances, a sudden gust of wind, or a slight change in the direction of the wind occurs, the masts are subjected to a sudden and severe shock. It is the opinion of Mr. Martell that the increased strains thrown upon the masts and rigging in sailing ships of recent construction have not been fully recognised, and though differing from him in the points upon which we have enlarged at some length, we yet think that his proposition is generally true. He quotes the case of the *Inconstant*, the largest unarmoured cruiser in the Royal Navy; and this brings us to the third and fourth alleged causes of disaster. The *Inconstant* carries a large spread of canvas, the height of her lower masts is less than in many mercantile sailing ships, and yet they are very much better supported than those of the latter. "In the first place," we are informed, "the spread of the shrouds of the *Inconstant* is 50 feet, whereas in the recent large merchant sailing ships it does not exceed 40 feet, and the shrouds are larger and more numerous, and the lower masts are of greater diameter." To this we may add the well known fact that the metacentric height of the *Inconstant* is small, although she has, from her high free-board, a great range of stability. It has been the custom of late years to secure the shrouds on the inside of the vessel instead of passing them outside channels, as was formerly the case. This we believe has been done because it was thought that the increased breadth of the ship gave a sufficiently great spread without going outside. At the same time, the increased breadth was made the occasion for a greater area of sail, and thus the candle was burned at both ends. Upon this question of the strength and staying of masts, it is very properly remarked that there is not now the check that was provided in the case of wooden ships by the straining of the vessel herself, if too great a press of sail was carried. It is said, "In a modern iron ship no such straining is visible, and if the vessel is excessively stiff, and does not heel much, no direct warning is conveyed until something gives way aloft, or until it has become so late that, with the limited number of men available, sail cannot be shortened in time to relieve the masts and rigging."

With regard to the fifth cause assigned, viz., that the masts were not strong enough at the deck, Lloyd's surveyors appear to be of opinion that there is but slight ground for such a conclusion, seeing that none of the masts in question broke at the deck, and seeing also that masts are usually doubled at that part. It is, however, stated that the masts broke between decks, and it is therefore recommended that masts be in future wedged at the upper as well as at the lower-decks, and that the upper-deck be strengthened so as to admit of this arrangement. We recently heard a suggestion made with regard to this subject which we think worthy of some consideration. It is well known that masts frequently break through jerking strains caused by the rolling of the ship. Could not the suddenness of the shock be mitigated by a somewhat different plan of wedging the masts. Might not a ring of vulcanised india-rubber, or some such material, surround the mast, having outside it an iron ring upon which might come the wedges. We do not propose to follow Mr. Martell through his remarks upon the importance of good workmanship and materials in all that relates to masts and rigging. They are of great importance in all parts of a ship, but nowhere more than in the special department now under consideration. The masts, the shrouds, and stays, and their connections with each other, and with the hull of the ship, constitute a system in which it is indispensably necessary that each member be fit to perform its duty, and in which most emphatically the strength of the weakest part is a measure of the strength of the whole.

A considerable number of valuable suggestions are thrown out in the course of this important memoir, and in conclusion it is recommended that the Committee make "the present tables for masts and yards a part of the rules, and have a form prepared for details of masts, yards, &c." We do not doubt that much good will follow from this and other investigations of the subject which are promised. It has been found that a cause of disaster hitherto not provided against, required to be seen into, and if possible, its future recurrence prevented. With its present constitution and its present position it is possible and easy for Lloyd's Committee to undertake any new duties, and to issue any new regulations which may appear to be necessary; unfettered by the consideration that outsiders will ask why the mischief was not perceived, and the remedy applied sooner. If the object be merely to furnish certain information about ships to those who insure them, at any time the Registry may propose to furnish any more information which may be worth the expense of the procuring. It was not furnished before because it was judged to be not worth the money which would have to be paid for it. The case would be altogether different if the inspection so ably conducted by Lloyd's surveyors were extended, as has been proposed, within the last few years. Make them or any other body responsible

for the efficiency of every ship in the Mercantile Marine, and such a candid and impartial investigation as that in the paper before us becomes impossible. Why was it not done before? Why do you wait for disaster? Why have you not foreseen and prevented disaster? would be justifiable inquiries. Sailing ships as well as steamships have foundered at sea, and no one has come home to tell us how some have been lost through being badly masted or improperly stowed. Doubtless such has been the case, and we believe it is better provided against by making it the business of every shipowner to look after his own ship, and by the well-directed efforts of such societies as Lloyd's, whose *raison d'être* is their efficient performance of the work for which they are paid, than by placing our Mercantile Marine under the sole charge and responsibility of any society whatever. The piece of really good work before us, although imperfect and inaccurate in some of its details, as we believe we have shown, is, we submit, a proof of what may be done by Lloyd's while it is merely a registry of shipping, an instance of what would not and could not be done if it had the power, which some of its mistaken friends recently asked for it.

In concluding these remarks it may be well to point out that the scale proposed by the Royal Commissioners to be marked on the sides of the ship amidships, although evidently intended to furnish only a record of freeboard, will have a very serious effect on the construction of ships. The scale proposed is to commence at the side of the deck and is not to be taken as commencing at an imaginary point which would allow for sheer and round of beam. If great clear side as shown by the proposed scale is to be deemed of paramount importance in future, the result will be a ship without round of beam and without sheer, and no one can say that such a style of ship is desirable. A load line that depends upon freeboard measured from any named part of the edge of any deck will lead to that part of the deck being unduly elevated and all other parts of the deck unduly depressed, and a new type of ship will be created.

UNITED STATES.—SHIPS' MANIFESTS.—BOARD OF TRADE, Feb. 13.—The Board of Trade have received, through the Secretary of State for Foreign Affairs, a copy of a despatch from Her Majesty's Minister at Washington, inclosing correspondence with the United States Government, from which it appears that all vessels in ballast, whether of American ownership or otherwise, trading from foreign ports to ports in the United States, when within four leagues of the coast, are required to be provided with manifests on which their sea stores are exhibited, and the masters of any such vessels failing to be so provided are liable to a fine of 500 dollars.

COMPENSATION TO SEAMEN.



RATHER peculiar case of compensation under the 167th section, Merchant Shipping Act, 1854, occurred at Cardiff on the 15th January, 1875, Singularly enough, a letter appeared in the *Shipping and Mercantile Gazette* about the same time, asking if seamen are entitled to "compensation" should a vessel put back in distress, disabled, and discharge cargo. The letter was signed "Vindex." The editor appended a note which is worth quoting, and we give it nearly *verbatim* :—

Before Parliament passed the 13th and 14th Victoria, chapter 98, the position of seamen with regard to wages was well understood. If he entered on his duties and was discharged before the voyage was commenced, he had a summary remedy for wages. If owners abandoned the voyage his remedy was at common law (*vide* the City of London Admiralty Court, 5th November, 1839). The mode of recovery was too costly for a sailor ; therefore the Legislature gave a summary remedy for compensation, but fixing a maximum ; and it was enacted, by section 57 of 13 and 14 Victoria, chapter 98, that " any seaman who has signed an agreement and who is discharged before the commencement of the voyage, or before one month's wages are earned, without fault on his part justifying such discharge, and without his consent, shall be entitled to receive from the master or owner, in addition to any wages he may have earned, due compensation as if it were wages duly earned. That clause now forms section 167 of the Merchant Shipping Act, 1854. Previous to the above Acts, seamen considered, when hired for a voyage, and were prepared to perform their agreement, they were entitled to wages for the voyage. There was no general rule of law to settle the question, and the Admiralty Court declined to hear such claims, as redress could be sought at common law. In the present case the seamen were discharged " before one month's wages were earned," therefore they are entitled to the wages due up to the day of discharge, as also provisions and compensation in addition thereto not exceeding one month's pay. The seamen could have been sent to prison for refusing to proceed to sea, and they were bound to stand by the ship until she was in a fit state to have resumed the voyage. She was not a wreck (*vide* section 185, Merchant Shipping Act, 1854), but only put back to repair damages. The owner would be bound to send forward the cargo by another vessel, or to repair his ship and carry the goods on. The men having been discharged without fault on their part, the statute applies in this case ; and, as they are precluded by the Act from applying to a superior court, it rests without the magistrates to award them

for the efficiency of every ship in the Mercantile Marine, and such a candid and impartial investigation as that in the paper before us becomes impossible. Why was it not done before? Why do you wait for disaster? Why have you not foreseen and prevented disaster? would be justifiable inquiries. Sailing ships as well as steamships have foundered at sea, and no one has come home to tell us how some have been lost through being badly masted or improperly stowed. Doubtless such has been the case, and we believe it is better provided against by making it the business of every shipowner to look after his own ship, and by the well-directed efforts of such societies as Lloyd's, whose *raison d'être* is their efficient performance of the work for which they are paid, than by placing our Mercantile Marine under the sole charge and responsibility of any society whatever. The piece of really good work before us, although imperfect and inaccurate in some of its details, as we believe we have shown, is, we submit, a proof of what may be done by Lloyd's while it is merely a registry of shipping, an instance of what would not and could not be done if it had the power, which some of its mistaken friends recently asked for it.

In concluding these remarks it may be well to point out that the scale proposed by the Royal Commissioners to be marked on the sides of the ship amidships, although evidently intended to furnish only a record of freeboard, will have a very serious effect on the construction of ships. The scale proposed is to commence at the side of the deck and is not to be taken as commencing at an imaginary point which would allow for sheer and round of beam. If great clear side as shown by the proposed scale is to be deemed of paramount importance in future, the result will be a ship without round of beam and without sheer, and no one can say that such a style of ship is desirable. A load line that depends upon freeboard measured from any named part of the edge of any deck will lead to that part of the deck being unduly elevated and all other parts of the deck unduly depressed, and a new type of ship will be created.

UNITED STATES.—SHIPS' MANIFESTS.—BOARD OF TRADE, Feb. 13.—The Board of Trade have received, through the Secretary of State for Foreign Affairs, a copy of a despatch from Her Majesty's Minister at Washington, inclosing correspondence with the United States Government, from which it appears that all vessels in ballast, whether of American ownership or otherwise, trading from foreign ports to ports in the United States, when within four leagues of the coast, are required to be provided with manifests on which their sea stores are exhibited, and the masters of any such vessels failing to be so provided are liable to a fine of 500 dollars.

COMPENSATION TO SEAMEN.



RATHER peculiar case of compensation under the 167th section, Merchant Shipping Act, 1854, occurred at Cardiff on the 15th January, 1875, Singularly enough, a letter appeared in the *Shipping and Mercantile Gazette* about the same time, asking if seamen are entitled to "compensation" should a vessel put back in distress, disabled, and discharge cargo. The letter was signed "Vindex." The editor appended a note which is worth quoting, and we give it nearly *verbatim* :—

Before Parliament passed the 13th and 14th Victoria, chapter 98, the position of seamen with regard to wages was well understood. If he entered on his duties and was discharged before the voyage was commenced, he had a summary remedy for wages. If owners abandoned the voyage his remedy was at common law (*vide* the City of London Admiralty Court, 5th November, 1839). The mode of recovery was too costly for a sailor ; therefore the Legislature gave a summary remedy for compensation, but fixing a maximum ; and it was enacted, by section 57 of 13 and 14 Victoria, chapter 98, that " any seaman who has signed an agreement and who is discharged before the commencement of the voyage, or before one month's wages are earned, without fault on his part justifying such discharge, and without his consent, shall be entitled to receive from the master or owner, in addition to any wages he may have earned, due compensation as if it were wages duly earned. That clause now forms section 167 of the Merchant Shipping Act, 1854. Previous to the above Acts, seamen considered, when hired for a voyage, and were prepared to perform their agreement, they were entitled to wages for the voyage. There was no general rule of law to settle the question, and the Admiralty Court declined to hear such claims, as redress could be sought at common law. In the present case the seamen were discharged " before one month's wages were earned," therefore they are entitled to the wages due up to the day of discharge, as also provisions and compensation in addition thereto not exceeding one month's pay. The seamen could have been sent to prison for refusing to proceed to sea, and they were bound to stand by the ship until she was in a fit state to have resumed the voyage. She was not a wreck (*vide* section 185, Merchant Shipping Act, 1854), but only put back to repair damages. The owner would be bound to send forward the cargo by another vessel, or to repair his ship and carry the goods on. The men having been discharged without fault on their part, the statute applies in this case ; and, as they are precluded by the Act from applying to a superior court, it rests without the magistrates to award them

compensation, within the terms of the statute. If the vessel had been wrecked the wages only would have been due up to the lawful discharge of the crew ; but as sailors are not permitted to break their engagements if a vessel puts into a port for repairs, and it would be inexpedient to encourage them to do so, the 167th section should be acted on when seamen are discharged, though willing and ready to resume the voyage.

Taking up the question, a correspondent ("Vindex-Sequitur") in the same paper of the 30th January last, assumes that the vessel not only was distressed and discharged cargo, but so far distressed as to be compelled to abandon the voyage, and also, the articles of agreement between the master and his crew. He demurs, apparently, to the equity of the statute law in the case :—First, because no wilful wrong was done to the crew by the other party to the contract ; second, because voyage and articles being abandoned, perforce, "the seamen could not be compelled to go any further, and were not liable to arrest if they had deserted." Also arguing that seamen who break their engagements by sickness, &c., are not punished, *ergo*, ships should have the same consideration. Third, because seamen in signing agreement take part in a venture, the profit of which is the freight. Fourth, because vessel in making complete voyages (say St. Nazaire) in less than a month are only paid accordingly. These points form the *gist* of the letter, but he concludes by stating his opinion that the agreement, and, of course, its responsibilities, as defined by the existing law, should be adhered to where vessels are only slightly damaged and "still able to complete their voyage" after repair.

Referring to this letter, the editor of the *Shipping and Mercantile Gazette* publishes a leading article in the impression of the 4th February. He disposes of the points raised by his correspondent *seriatim*. He shows first, that in a civil contract, such as the hiring of a servant by month, quarter, or otherwise, it does not require a *wilful* wrong to be shown on premature discharge to enable that servant to obtain redress, in lieu of notice. Second, that a seaman cannot leave a vessel at will simply because a vessel puts back in distress, and condemns "Vindex-Sequitur" in severe terms for mooted such a doctrine. Third, that the idea of the sailor having a share of the adventure is nonsense, because the statute expressly states wages shall not be dependent upon the earning of freight. That the owner can insure, "but it is illegal to insure wages of a seaman." Fourth, that vessels making short voyages to the Continent usually employ their crews at weekly wages, and that magistrates would treat them accordingly. He finally admits a certain element of injustice in the case at point in these words :—"The injustice—if such it is—cannot be very galling ; it is rare indeed that claims

for compensation of the character here mentioned are adjudicated upon. Such cases are usually settled privately, or left to shipping masters. The law, however, is perfectly clear."

It appears to us that a misconception has arisen here in treating the subject in dispute, hence the ground is shifted by the disputants in arguing the matter. "Vindex-Sequitur" admits the law to be as stated, but argues that it ought, in equity, to be altered in order to meet the justice of a case wherein a vessel is so much damaged as to be obliged, by no fault on her side, to abandon the voyage and, *pari passu*, the agreement with the crew. The editor of the *Shipping Gazette* condemns him on the ground of his argument applying equally to ships that are only slightly distressed, and not therefore compelled by force of circumstances to give up the contract. Under the first point of dispute, the correspondent mentioned appears to have confused the criminal with the civil law, and is very properly set right. It surely cannot be necessary where there is merely a breach of a civil contract to prove a "wilful wrong." This is contrary to all experience and common sense. Such a theory, carried into practice, would soon put an end to half the cases in our civil courts. But in regard to a criminal offence it is equally evident that it must be "wilfully" done, otherwise it could not be constituted an offence at all. At the same time it must be borne in mind that contracts under the Merchant Shipping Act partake in some measure of both; for, although the sailor signs a civil agreement, he may be punished criminally for a breach. Moreover, there are certain sections, for instance, the 257th, where the word "wilfully" is imported, and its intent must be proved before a conviction can follow a prosecution. In the second point of dispute, a clear misapprehension has taken place. It is set forth that where articles are given up consequent upon an abandonment of voyage, seamen who desert thereupon cannot be arrested, nor, of course, punished. Now, this is true in a certain sense, but it must be *after* the articles are cancelled by the act of the master. To this he is compelled by the force of circumstances. If a vessel is so damaged as to discharge cargo and abandon the voyage when repaired, she may accept another charter, and go another round altogether. Instead of going to the Mediterranean she may go to the West Indies. The first cargo may have been sent out in another ship. The seaman cannot, surely, be compelled to go in the other vessel, being bound to the first; neither can he be compelled to go the second voyage, having signed for the first. To say, therefore, that he deserts under such circumstances is a violent construction to put on the deed. He is practically discharged, although he may not have been officially discharged, and have signed the "Release." If he were arrested under such an event it is not conceivable that any magistrate would send him to prison. There is

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evidently here an inadequate expression of the meaning, and the faulty construction of terms is too literally dealt with. By the third point, where it is stated that seamen take part in the "venture," it is quite clear that the editor has shown properly the law and the equity of the case. The law has, happily, raised the seaman now above the contingency of losing his wages where freight has been lost; and, as "compensation" is construed with wages in the Act, and recoverable as such, it stands to reason that, if entitled to it at all, he should have it quite independently of the freight consideration. On the fourth point, under notice, as to the meaning to be put upon the words "before a month's wages have been earned," it was evidently the intention of the Legislature to give the seaman a suitable compensation, if discharged ere the lapse of that period, to provide for his necessities before getting another situation; and to limit it so as not to make it excessive with reference to the small amount of profit earned by the ship to meet the contingency. It cannot follow, therefore, that vessels which make short trips should be liable to pay a whole month's pay either as wages or compensation. Many of our "liners" to New York have made the "round" in less than a month, and, although having monthly contracts, they are never assessed for the whole month, but merely the proportion due. There is an ambiguity created by the section, which was proposed to be altered by the bills of 1869-71, inasmuch as the limit of one month was deleted therein, and the period and amount left wholly open to the judgment of the magistrate.

On reviewing the interesting question herein raised, it is worthy of notice that the law, in trying to throw a protection around the sailor, gives him an advantage which may be for his pecuniary satisfaction, but certainly does not help his independence. It also, in giving him the vantage ground as against his employer, helps to make a breach between them. It separates, instead of making a community of interest and feeling. If an employer feels that he has done no wrong to the seaman, he naturally feels aggrieved when he is called to pay for a sentimental damage. There can be no better thing done than for the Legislature to place the seaman in the exact position of his fellow-subjects in the eye of the law, and where he is actually wronged he will be righted; but not where the wrong is created for him. Blackstone observes that "Equity, in its true and genuine meaning, is the soul and spirit of all law." Surely, then, all statute law should aim at embodying equity in its provisions. In the case under notice, where a ship is so distressed as to become, for the voyage undertaken, *de facto* a wreck, she is compelled to give an award to her servants, whom she has not wronged, but has paid them their due to the uttermost farthing. If she had been entirely cast away, and not able to be repaired, and if the seaman

had lost all but his life, he could claim nothing in addition to his wages ; but, in the other case assumed, he meets no loss, save the chance of other employment—a feature incident to a sailor's life—and the magistrate has no option at law but to award him so much money as a *solatium*, for what, in most cases, is a sentimental grievance.

Some modification, in the line of the Bill of 1871, is required, and would serve as an instruction to the justices how to act in such difficult cases.

CORRESPONDENCE.

SAILING IN COMPANY.

To the Editor of the "Nautical Magazine."

DEAR SIR,—The terrible news which reached us yesterday through the English journals of the loss of life by the burning at sea of the *Cospatrick*, formed the topic of conversation yesterday in our immediate small circle of Englishmen resident here, and discussing the accident, its cause, the surveyor's report of the thorough efficiency of the vessel, equipment, master and crew, we reached the conclusion that, under the circumstances, there was but one possible suggestion to offer, which, while it might prove useful in preventing a recurrence of so appalling a catastrophe, would, at the same time, instil confidence in the minds of emigrants, viz. :—

That emigrant ships, especially on long voyages as that of the *Cospatrick*, should sail in company, of two or three vessels at a time, ships of equal sailing qualities being, as far as is possible selected, and a full and complete understanding as to the track, day and night signals, &c., agreed upon between the masters before departure.

I may mention that, when some twenty years ago I lived on the opposite shores of the Black Sea, I repeatedly sailed across it to and from the Circassian coast in the depth of winter in the frail *sandals* of the country, but never ventured on the voyage unless I set out in company with three or four of these craft, for the keeping of which together, I preconcerted plans and signals, and in February, 1856, while in the middle of the Black Sea, the *sandal* in which I was a passenger foundered at night through overloading and stress of weather, and but for my above alluded-to precaution, I most certainly would not now be penning this communication. Seven Turks, forming the entire crew, my servant, myself and my sporting dogs, everyone's baggage, effects, and provisions, were rescued by one of the flotilla and safely landed at Rizeh three days afterwards. The Turkish seamen, panic-stricken at first, took courage

and consolation from the knowledge that we could not be far from succour, and exerted themselves to their utmost at the pumps and in jetsaming cargo, thus keeping our frail ship afloat until my signal rockets, fired in repeated succession, brought back two of our companion craft to help us.

The safety of this system of sailing in groups for mutual protection is well known among the small speronaras which provision Malta from Sicily, and I also observed it years ago in ports of the Barbary States, in the Adriatic and Grecian Archipelago, while the utility of the convoy system during war times in days of yore, though adopted for other purposes, is too well-known to require comment.

I am, dear Sir, yours truly,

A SUBSCRIBER.

Nicolaiev, 9th January, 1875.

SHIPS' COMPASSES.

To the Editor of the "Nautical Magazine."

DEAR SIR,—Your correspondent, "J. M.," has either read my communication without perceiving its true meaning, or else I have failed to convey an accurate idea of the real merits of the question at issue. The battle of compensation *versus* computation was fought years ago, and the result may be briefly expressed in the following terms, *approximate compensation plus computation*; and in this expression the term approximate is used because accurate compensation is a practical impossibility, and compensation itself is simply necessary for the reduction of errors within useful limits. Knowing this, Mr. Editor, you may imagine my surprise when I find myself charged with insinuating that no good can result from compensation. If "J. M." had said Government inspection, instead of compensation, he would have hit the mark, for unless the aforesaid inspection can be made to subserve some good and useful work, then I do not believe in it; and if compass inspectors are a necessity on shore, I think it will be self-evident, from my former letter, that they would be a double necessity at sea.

In stating that "no shipmaster, capable of resolving the magnetism of his ship into its various components, would quietly submit to the dictum of a Government inspector, I did not mean that it would be a matter of professional pride. The engine-room inspector does not determine the power and kind of engine, neither does he insist upon its being supplied with back balances: but in this question of compass inspection, "J.M." actually proposes to do more than this, and do it needlessly, for as the weakest link represents the maximum strength of the chain—if a ship

is to be lost, what does it matter whether it occurs at the beginning, middle, or end of her voyage.

In regard to "the judicious alterations in the examinations by the Board of Trade" acting as a stimulant to the Mercantile Marine, I must confess that I cannot see it. A shipmaster may have the experience of years, and hold a certificate for "extra-master," "steam," and "compass deviations," and find some youngster, with an ordinary certificate, placed over his head. There is no distinction of any kind made in the foreign trade, save in regard to the conveyance of "troops," "Government stores," and "Government emigrants;" all other kinds of passengers and emigrants fall within the scope of an "ordinary certificate." This should not be. There are plenty of masters holding ordinary certificates who have proved themselves to be fully competent to navigate iron ships and steamers, and, such being the case, their interest ought to be attended to in dealing with this subject; but the fact that a master may pass from the command of a fruiting-schooner to the command of the *Great Eastern*, without any previous preparation for the change, may go far to account for many serious disasters, and some of the strange freaks of the individuals "J. M." refers to in his first communication. The fact is matter which we have been accustomed to look upon as something inert and simple, is really, in its ultimate structure, amazingly involved—its molecules pulsate with almost infinite rapidity, and are acted upon by forces which have their origin at enormous distances, so that an explosion of hydrogen gas in the sun, by producing a magnetic storm upon the earth, has deflected a needle 5°, as witnessed by Professor Joule, about two years ago. This being the case, what serious disturbances may be expected to take place in the magnetism of an iron ship? The utmost, therefore, that we can do, since we cannot divest the sea entirely of its dangers, is to place every encouragement in the way of those who devote their lives to it, and who strain every nerve to keep themselves acquainted with all that science develops for the advancement of their profession.

I am, my dear Sir, yours respectfully,

H. C. W.

FOG-SIGNALS FOR VESSELS UNDER WEIGH.

To the Editor of the "Nautical Magazine."

SIR,—In your December number of the *Nautical* are the latest suggested "fog-signals by vessels under weigh," and for steamers it is suggested—

One blast of the whistle,	I am porting ;
Two ,, ,,	starboarding ;
Three ,, ,,	alarm ;
Four ,, ,,	going astern.

I should like to ask for a little information on the subject. First, is it intended to make those signals compulsory at all times, and under all circumstances? Second, if so, how is it proposed to distinguish one steamer's two or three blasts from another steamer's two or three blasts, where a number of steamers, of all descriptions, run into a fog-bank outside the mouth of a harbour or river, which is very often the case?

It would be a capital thing for two or three steamers, where there is plenty of room; but in a small area, a strong tideway, or where steamers are very plentiful, I am afraid it would make confusion worse confounded.

Yours truly, MASTER.

Bristol, January 21, 1875.

[We hope that the practical observations of our correspondent will receive attention in the proper quarter, and that the authorities and their advisers will bear in mind the inadvisability of requiring too many things to be done in moments of difficulty and danger. To hamper the shipmaster with numerous Government regulations just when he wants to exercise all his professional skill and independent judgment, is undoubtedly a serious thing, and is only warranted by extreme necessity.—ED.]

CAPTAIN DAVIS'S IMPROVED SEXTANT.—In a previous number (November, 1873) we noticed a paper read before Section A, of the British Association for the Advancement of Science, at Bradford, by Captain J. E. Davis, R.N., of the Hydrographical Department of the Admiralty, on an Improvement in the sextant, by a simple arrangement, consisting of a micrometer wheel attached to the tangent screw and moveable indicators to the arc, by means of which a series of observations (limited only by the length of the tangent screw) can be made without the necessity of reading off at the time, or removing the eye from the telescope. Captain Davis has now completed the fittings, and the arrangement appears both simple and ingenious. Its utility is evident, not only for star, lunar, and circum-meridian observations and equal altitudes, but for all observations at sea, and particularly when the sun, moon, or stars are only seen for a short interval. The micrometer arrangement can be thrown out of gear at pleasure, and the sextant used as an ordinary one. Not the least important point is that by sending two or three exact measurements, the fittings can be sent by post, and any ordinary watchmaker or mechanic can apply them. We commend this little invention to the notice of the nautical world. The improved sextants are sold by Mr. Potter, 31, Poultry, E.C.

BOOKS RECEIVED.

The Port Charges of Great Britain and Ireland. By Robert Thubron.
London: C. Wilson, Leadenhall Street. 1872.

WE have received a copy of this very useful work, and consider it to be well put together, the information given as regards each port being exceedingly full and varied, and the whole scope of the book well conceived. The copy we have received is dated 1872, but as changes are constantly taking place in regard to the arrangements at the various ports, we should think that frequent and cheap editions of this work would make it still more valuable and trustworthy.

Descriptive Statement of the Great Water Highways of the Dominion of Canada, &c., &c., with Appendices relating to the Commerce and Navigation of Canada. By W. J. Patterson, Secretary of Dominion Board of Trade, &c., &c. Montreal: Dawson, Bros. 1874.

THIS is a most interesting and important little book. It gives accurate information regarding the hydrology of the Gulf and River of St. Lawrence, and shows generally how extensive and valuable are the water communications throughout the Dominion, and how their capabilities have been, and are being, developed. This little work ought to be published in this country, so as to make known to the British public the particulars of the resources of Canada, which are very little understood at present. The Canadians, however, are themselves fully aware of the natural advantages which they possess, and are not slow to avail themselves of them. The elaborate system of canals, for navigating thousands of miles into the interior of the country, is well worth consideration.

Supplement to the Annual Report of the Department of Marine and Fisheries for 1873, being a List of Vessels on the Registry Books of the Dominion of Canada, on 31st December, 1873. Ottawa, 1874.

THIS is merely a list, the total of which is 6,783 vessels, amounting, in all, to 1,073,718 tons. We notice the book on account of the pleasing fact that Canada is steadily advancing in Mercantile Marine affairs. This registry is the very creditable child of the Official Department of Marine and Fisheries, and we have no doubt that, under such well managed auspices, the list will continue to swell, and the tonnage to increase to the honour and glory of the "blue noses."

Digest of Statutes Relating to Merchant Shipping. Prepared under the direction of the Board of Trade. 1875.

THIS Government publication is at the present time most seasonable; the members of both Houses of Parliament, to whom it is presented by com-

mand of Her Majesty, will find it exceedingly useful for purposes of reference when the new Merchant Shipping Bill comes on for debate. In this work all the clauses in different Acts which refer to the same subject are brought together, so that it is possible to see at a glance how legislation has at different times dealt with the same subject. It would appear that the total number of clauses comprised in the various Merchant Shipping Acts amounts to nearly 1,150. No other class interest, we venture to say, is so tied and bound by legal fetters; but, perhaps, it is all for their good. But apart from that, we think the work itself is quite a credit to the Government Department from whence it emanated, and it will certainly facilitate the labours of all who, like ourselves, are concerned in Mercantile Marine affairs.

EXPLOSION ON BOARD THE S.S. "WINSLOE."

[The importance of the experiments herein referred to cannot be over-rated, and we, therefore, think it right to publish the full account of the inquiry for the information of our readers. It would seem that it is not only superheaters which were affected, but any iron plate subject to the impact of flame is shewn to be weakened thereby. This will, no doubt, raise questions in regard to other iron structures which have to bear strains and to which great heat is applied.—ED.]

REPORT of the Court of Inquiry held at Liverpool, under the order of the Board of Trade, before THOMAS STAMFORD RAFFLES, Esquire, Stipendiary Magistrate, and CAPTAIN PRYCE, Nautical Assessor, and Mr. THOMAS W. TRAILL, C.E., Engineer Assessor, into the circumstances attending an explosion, causing the death of two men on board the s.s. *Winsloe*, on her voyage from Liverpool to Huelva, on the 24th August, 1874.

The *Winsloe* was an iron screw steamer of 824 tons gross, and 685 tons registered. She was built at Seacombe, Cheshire, in 1870, and was owned by Messrs. Paige, Reid, and Strong, of Liverpool, managing owners, and others. She left Liverpool on the 23rd of August last, bound to Huelva, with a cargo of railway iron, gunpowder, &c., under the command of Mr. Robert Jeffery, who holds a certificate of competency dated 19th March, 1878, and with a crew of twenty-two hands all told. All went well till about 7.30 p.m. on the 24th, when—the vessel at that time being 54 miles S.W. of the Scilly Isles, and going $8\frac{1}{2}$ to 9 knots with a light breeze and favourable weather—a slight noise was heard as if

something had exploded, and immediately afterwards a great body of steam and dust came out of the stoke-hole and engine-room. The master at this time was on the bridge, and as soon as an investigation could be made, it was discovered that two men were missing—viz., William Towers and Nathaniel George, both firemen. Shortly afterwards they were both found in the stoke-hole quite dead. The bodies were taken on deck, and the vessel hove to for the night. It was ascertained, when they were able to go below, that one end of the superheater had been blown out. The next morning the s.s. *Lindsay* hove in sight, and the *Winsloe* was towed into Falmouth. About thirty miles from that port the two dead bodies, which were said to be becoming offensive, were buried. The vessel, after undergoing some repairs to her superheater, proceeded on her voyage to Huelva, which she reached in safety.

The material point in this case had reference to the construction and efficiency of the superheater. It was what is usually known as a cylindrical steam receiver and superheater, and was placed horizontally over the top of the boilers in the uptake. The ends were dished, and it was found that about the middle of one end had been fractured and a considerable piece had been blown out, and, doubtless, this was greatly caused by the direct impact of heat and flame acting upon the iron and deteriorating it. The fractured end of the superheater was produced before the Court on the first sitting, and an adjournment of the inquiry took place, in order that it might be removed to London and thoroughly tested. This was done, and, on the re-assembling of the Court, the result of the testing experiments which were made at Mr. Kircaldy's works in London, under the immediate superintendence of Mr. H. D. Grey, Principal Surveyor to the Board of Trade for the S.W. of England, were given in evidence. The experiments proved that the strength of the iron was greatly reduced when hot, and very much beyond what might have been expected without the knowledge gained by the experiments, which also proved that the iron had originally been of good quality. The practical conclusion arrived at was, that this construction of superheater was dangerous unless the plates, and particularly the ends, were protected from the direct impact of heat or flame by baffle plates, and the ends efficiently stayed, and that the ends when dished should be stayed even when not subject to the direct impact of heat and flame, but the amount of staying would depend very much upon the diameter and pressure at which the boiler was to be worked, in fact treating the ends much as if they were a flat surface. All the scientific witnesses called before the Court agreed in the conclusion that the immediate cause of the accident was the deterioration of the iron caused by the constant impact of heat and flame; that putting in baffle plates and staying the ends were the proper means to be adopted in cases of a similar construction,

and in this very case these remedies had been applied by the owners of their own accord after the accident. The Court absolved the master from all blame for the disaster, or its consequences, but regretted that the unfortunate men who were killed were so hastily buried at sea by his orders. The Court also considered that the owners were not aware that they were running any risk in having a superheater of this construction.

After the warning given by this accident, some decided steps should be taken to obviate its recurrence in vessels whose boilers are similarly arranged.

T. S. RAFFLES, Stipendiary Magistrate.
Liverpool, 9th December, 1874.

We concur in this report—

CHAS. E. PRYCE, Nautical Assessor.
THOMAS W. TRAILL, Engineer Assessor.

APPENDIX I.

Henry David Grey, sworn, says :—

I am the Principal Surveyor of the Board of Trade for the S. and S.W. coast of England.

I heard of the accident to the s.s. *Winsloe*, and I went to Falmouth to inspect her. I found the superheater with the pieces blown out. It showed signs of corrosion, but not very much. Other parts of the superheater showed signs of corrosion. The other end (the corresponding end) was exactly in the same state. One piece of the fracture, which I produce, which had been blown out and detached at the time I saw it, you can see the light through it. A large piece had been actually burst out. What I saw about the 27th August last presented that appearance; the piece was out. I have never seen an accident similar to this before. I have frequently met with superheaters of this construction and placed in this position. Steam-chests are often seen outside. This superheater is of common construction. From our experience now, since we have tested these plates, it is not a safe construction. I superintended the testing of the head of the superheater produced at the yard of Messrs. Kircaldy at London. I produce a sketch of the superheater, showing parts cut out, with a number corresponding to parts cut out of the head, cut in different directions so as to make it a fair sample of the iron, yet so as not to interfere with the original fracture. The parts cut out are all produced by me, and they are numbered respectively. One piece of each was tested hot. The corresponding piece was tested cold. The average strength of the cold pieces was 19·4 tons. The maximum strength was 21·58 tons. The minimum

was 15·08 tons. The average of the other pieces red hot was 4·6 tons. The maximum strength was 5·44 tons. The minimum was 2·87 tons, and the relative strengths, the weakest was as 5·32 to 1. The result of these experiments is this, that at the working pressure the superheater was at the point of explosion whenever it was red hot. That is an entirely new light. As the result of this I believe that this form of construction is totally dangerous. These experiments prove conclusively that all structions of this kind, subject to the impact of flame, are dangerous.

Superheaters have always been regarded with a certain amount of suspicion. Certain superheaters of this construction have been removed.

By Mr. Tyndall.—Superheaters have been passed by the Board of Trade, but I would not pass such now, and the inspectors of the Board of Trade should not pass them in my opinion. This has been entirely on the result of the experiments referred to.

I have heard of an instance of an accident similar to this in a Liverpool ship. Until these experiments were made, the bursting strength of hot plates had never been ascertained or published to my knowledge.

I have only ascertained the other accident of this nature since this one happened.

By Mr. Traill.—I believe the plate in question is a good plate, and as good a one as can generally be got.

By Mr. Raffles.—Before this accident I could have seen nothing that would have caused me to stop the ship.

I should have been afraid to have worked the vessel had I known what I know now.

My attention was called to the piece of plate produced that you could see through, it being the opinion of many practical men that it had been originally a bad plate. The plate has not been a bad one, but it has been thoroughly soft and blown out like a glass bottle. I recommend in future that all structures that are subject to violent impact of flame should be protected with plates. I should be afraid of such structures unless thoroughly guarded with plates and stayed.

By Mr. Traill.—If it were constructed according to the ordinary rules for boiler structures it would be nothing like strong enough.

With superheaters already so fitted, I would recommend them to be removed entirely, or to be protected from flame, but the latter would interfere with their efficiency.

Superheaters have been looked upon with suspicion, and nearly all superheaters that I have had to do with are made so as to be done away with immediately if found necessary. I recommend that all dished ends be stayed.

(Signed)

H. D. GREY.

RESULTS OF EXPERIMENTS TO ASCERTAIN THE TENSILE STRENGTH, &c.

Test No.	Original		Ultimate Stress.		Fractured.			Stress per sq. inch of Fractured Area.		Extension.		Appearance of Fracture.
	Size.	Area.	Total.	Persquare inch of Original Area.	Size.	Area.	Difference.	lbs.	Per cent.	Inch.	Per cent.	
				lbs.			Area.					
I.												
3301	1.50 x .38	.540	26,104	48,340	1.40 x .33	.462	.078	14.4		.62	12.4	Fibrous.
3303	" x .42	.510	23,986	46,938	1.44 x .32	.461	.049	9.6	7.8	.35	7.0	Do., 10 % Crystalline.
3305	" x .28	.420	18,342	43,671	1.46 x .27	.394	.026	6.1		.30	6.0	Fibrous flaw
3307	" x .27	.405	13,684	33,787	1.48 x .27	.400	.005	1.2		.12	2.4	Ditto, bad weld.
3302	1.50 x .39	.540	6,591	12,205	1.30 x .30	.390	.150	27.7		.91	18.2	Fibrous.
3304	" x .37	.555	8,252	14,868	1.29 x .30	.387	.168	30.2		.96	19.2	Ditto.
3306	" x .30	.450	3,654	8,120	1.34 x .26	.348	.102	2.6	21.6	.58	11.6	Ditto flaw.
3308	" x .27	.405	5,569	6,343	1.46 x .26	.380	.025	6.1		.24	4.8	Ditto flaw.
3309	1.25 x .43	.537	21,102	39,296								Fibrous 5 per cent. crystalline, flaw.
3310	" x .42	.525	21,724	41,379								Do. 5 per cent. do.
3311	" x .44	.550	21,888	39,796								Do. 5 per cent. do.
3312	" x .47	.587	24,272	41,340								Do. 2 per cent. do.

All the pieces required to be heated for straightening.

BRITISH TRADE WITH DENMARK.

THE commercial relations between Denmark and Great Britain, according to Sir C. Wyke, Secretary of Legation at Copenhagen, appear eminently satisfactory, both as regards their present state, and the prospect of additional facilities being afforded for their progressive expansion. Since the last revision of the Danish Customs' Tariff in 1863, foreign goods have been admitted at greatly reduced duties, levied merely for fiscal purposes. The Danish exports are almost exclusively restricted to agricultural produce, and are, therefore, exempt from duty in Great Britain. Under the influence of such peculiarly favourable circumstances, Danish trade has not only been successfully diverted from other countries to the advantage of the United Kingdom, which already absorbs nearly one-half of it, but it has increased at such a rapid ratio as now to equal in amount the total at which it stood previous to the loss of two-fifths of the Danish territory.

The Danish Government is so fully impressed with the beneficial effects of the commercial policy adopted since 1863, that it has been for some time back actively engaged in endeavouring to bring about a fresh revision of their Customs' tariff, which last year proved unsuccessful. They have, however, again submitted to the Rigsdag the draft of a revised tariff, which has been referred to the Lower House. The proposed alterations, it is calculated, might at first entail a trifling loss to the public revenue, which would have to be met in some other way. There can, however, be little doubt that either the present measure or one of similar import will eventually be carried out. The main features of the proposed revision are the further development of free-trade tendencies, to be effected rather by the simplification of the tariff and the equalization of duties than by any important reduction in their actual amount. It is proposed to diminish the present number of duty-bearing articles from 300 to 180; to reduce the duties on such articles as paper, glasswares, stone, china, porcelain, certain classes of woollen and cotton goods, iron and iron-wares, wood in a prepared state, &c., and to raise those on tobacco, wines, hops, teas, cacao, spirits, dried fruit, &c. Although these modifications may not at once be attended with any very appreciable results, still they afford satisfactory evidence of the desire on the part of the Danish Government to conform their commercial policy as closely as possible to that of our own Government, and cannot fail to conduce gradually to the further consolidation and development of our commercial relations with Denmark.

A CURE FOR TYPHOID.

DR. STEIGER'S METHOD.

WE print, for the use of those of our readers who are officers of merchant ships, the following letter, which appeared recently in the *Times*. We have reason to believe that the treatment therein referred to is effective. At all events it will be a safer treatment in the hands of master mariners than would an experimental trial of the contents of the ship's medicine chest. The letter is from the Rev. John O. Stephens, Vicar of Savernake, and Hon. Secretary to the Savernake Hospital:—

In the recent discussion as to the cause of typhoid fever, has not an equally if not more important question been overlooked—viz., whether the treatment of fever almost universally adopted throughout England is the most efficacious means of arresting, eradicating, and curing the disease? That there is another system worthy of serious consideration at the hands of the medical profession at large, the following facts clearly prove:—On my being taken suddenly ill last year at Lucerne, and acute symptoms of a threatened fever setting in, my friends forthwith called in Dr. Steiger, who enjoys a considerable reputation throughout Switzerland. He ordered me at once to be what is called “packed,” and on my expressing surprise, he said, “I am thankful to tell you that the doctors in Switzerland and Germany have at last learnt the value of simple remedial measures; when Bourbaki's army entered Switzerland, I had charge of the fever hospital for this district, and out of twenty-four patients suffering from typhoid fever (two were brought in dying), I cured twenty-two entirely by application of the wet sheet. I used neither medicines nor stimulants, and the soldiers completely recovered their health in a very short time. During the last eight years this system has been carried on in the Basle Hospital with signal success, reducing in a surprising manner the death-rate in the fever wards. In private practice I invariably adopt this system, and rarely lose a patient whom I have treated from the commencement of the fever. I have been particularly successfully in puerperal and scarlet fevers. This system is now almost universally adopted throughout Switzerland and Germany.” Through Dr. Steiger's assiduous attention and packing treatment, I was able to resume my journey in two days. Now, if not trespassing too much on your valuable space, may I be allowed to explain the process and the principle?

1. *The Process*.—A blanket is spread out on the bed, and a sheet wrung out in cold water, placed on the blanket; the patient is then, wrapped up in the sheet, and the blanket tightly packed round the body; other blankets are finally placed over the patient. In lieu of the sheet,

a towel or towels may be used, depending entirely on the extent of fever and the probable reactionary powers of the patient. The sheet is renewed every ten minutes or quarter of an hour, according to the temperature of the body, which is ascertained from time to time by placing a thermometer in the arm-pit of the patient. It will be found that each sheet will reduce the fever from three to seven degrees. This process is continued for about an hour, after which the patient is quickly washed over for a couple of minutes, either on the bed or in a tepid bath, and put back into bed. It is renewed at intervals of four or five hours until the fever is entirely subdued, which crisis is usually shown by a spontaneous outbreak of natural perspiration. By means of the thermometer, the fever can be kept in check by repeated sheets as easily as a steam-engine can be controlled by the handle of the machine.

2. *The Principle.*—It is always difficult to explain in simple language a system depending upon and that ought to be studied by the laws of science, but, in plain words, the wet-sheet-pack is simply a cooling poultice. As is well known, the rationale of all diseases is the determination of blood in excess to the interior of the body, and the foundation of all curative processes ought to be the withdrawal of such blood for healthy re-distribution throughout the body. This is the principle of a poultice, and of the wet-sheet-pack. It withdraws the heat of fever as generated by accumulated blood, and it is continuously repeated till the body regains its normal temperature through a restored equilibrium of circulation. Furthermore, the poison, which is the cause of all specific fevers, is thus made to expend itself harmlessly, without involving the body in the destructive consequence of prolonged febrile excitement. It has been proved, without doubt, that the disease by this system can be arrested and eradicated in the course of a few days, without running what is considered the usual course of 7, 14, 21, and 42 days. The subsequent period, also, of a long convalescence is entirely avoided. It is at the urgent request of many friends that I now venture to make public these statements; and I trust the medical profession at large, towards whom we all owe a deep debt of gratitude, will kindly accept these suggestions in the spirit in which they are offered. As a layman, I am unable to enter into the medical and scientific part of the question; but Dr. Steiger, of Lucerne, with whom I have lately been in correspondence, has kindly given me permission to use his name, and any letters addressed to him on this subject will, I am sure, receive his best attention. The only apology I can now offer for this letter is the deep interest I have long taken in hospital work, and the conviction that a system so simple in its application and so effective in its cure, when adopted in such countries as Germany and Switzerland, is not unworthy the practical consideration of the medical profession in England.

HYDROGRAPHIC.

MADAGASCAR—WEST COAST.

Information relating to the following dangers has been received from Captain Thomas Le H. Ward, R.N., H.M.S., *Thetis*.

Thetis Shoal.—On the 3rd July, H.M.S. *Thetis*, when rounding West point, Majambo bay, grounded at three-quarters of a mile off shore; the least water obtained at low water was 12 feet, mud, with 9 fathoms immediately westward of it; from the ship, when aground, the inner part of West point bore S. 11° W., and Table hill, S. 72° E.

Entering or leaving Majambo bay no vessel should round West point at a less distance than one mile.

Also, on the 18th July, the *Thetis* grounded on a shoal, on which the least depth found at low water was 15 feet, with 13 fathoms immediately to the S.W. of it, about 8½ miles N. by E., from cape Tanzou (the east point of Makambytra bay), and in lat. 15° 38' S., longitude 45° 49' E., where, heretofore, there was supposed to be not less than 6 fathoms.

Vessels navigating in these waters should use the charts with due caution, as the coasts have not been thoroughly surveyed.

FLYING FISH SHOAL.

The following information relating to a coral shoal at the southern part of the Parcel bank has been received from Navigating Lieutenant R. W. Middleton, H.M.S. *Flying Fish*.

Flying Fish Shoal.—H.M.S. *Flying Fish*, on the 27th October, passed over a coral patch which appeared to extend for about a mile in a N.W. and S.E. direction, and to be about half a mile across. The least depth obtained was 15 feet at low water springs, but from the colour of the water it was thought probable that shoaler heads existed. The position of the shoal is in latitude 17° 57' S., longitude 49° 40' 30" E.

The reef marked "heavy breakers" on the chart, in latitude 18° 2' S., longitude 49° 44' E., was seen breaking from the deck of the *Flying Fish* (at 1½ miles W., by N. ¾ N. from it), 8 fathoms being obtained at the time; thence the water deepened to 10 and 19 fathoms within one mile of Flying Fish shoal.

LOUGH CARLINGFORD.

(By Staff-Commander James H. Kerr, R.N., in charge of Admiralty Survey, 1874.)

A cut has been made through the bar of Lough Carlingford; the channel thus made is 400 feet wide, with a depth of 15 feet at low water

spring tides ; the bottom, however, is very rough, and is probably strewn with loose boulders. The two leading lights described below mark the direction of the cut, besides which its sides are buoyed with black buoys on the port hand entering, and red buoys on the starboard. The black buoy on Hellyhunter rock must be left on the starboard hand.

On the western edge of the rocky ground, which extends from Green island to Halpin rock, several patches of 12 to 17 feet have been found.

A sunken pinnacle rock, having 8 feet water on it at low water springs, and 20 feet close to, lies about 80 yards S.W. by S. from Frazer rock. The red buoy with staff, which heretofore has marked the Frazer rock, has been moved about 60 yards in a south-westerly direction, and now lies immediately to the south-west of the pinnacle rock. From the rock, Greenore pier light bears N.W. $\frac{3}{4}$ W., Earl rock perch N. $\frac{1}{2}$ W., and north end of Greencastle E. $\frac{3}{4}$ N.

Lights.—Haulbowline lighthouse, on a rock at the west side of the entrance, is 111 feet from base to vane, exhibiting at 104 feet above high water a fixed white light, visible 15 miles ; a second white light is shown half way up the tower from half-flood to half-ebb ; a ball is hoisted by day during the same period. A *red* light is shown from a window on the third floor between N.E. $\frac{1}{2}$ E. and N.E. $\frac{1}{2}$ N.

Leading lights for the channel through the bar :—Two screw-pile lighthouses are placed on the outer-edge of the bank between Soldier's point and Green island, bearing from each other N.N.W. $\frac{1}{4}$ W. and S.S.E. $\frac{1}{4}$ E., 500 yards apart ; both exhibit fixed white lights, the outer 23 feet above high water, visible 5 miles ; the inner 40 feet above high water, visible 6 miles.

Greenore lighthouse, on the south side of the point, exhibits at 23 feet above high water a white *revolving* light *every* 45 seconds, visible 9 miles ; this light is obscured when bearing east of S. $\frac{1}{4}$ E. by the new buildings on the point.

Greenore pier light, N. $\frac{1}{2}$ E. 100 yards from Greenore light, is *red*, 33 feet above high water, lighted by gas, and should be visible 5 miles ; when in line with Greenore light, it leads between Watson and Stalka rocks.

Tides.—It is high water, full and change, at Greencastle point 11h. 0m. Springs rise 16 feet ; neaps 11 feet. The ebb stream sets fair in the direction of the channel of the lough, and also of the cut through the bar ; the flood stream inside Haulbowline sets in the direction of the channels, but outside sets across the bar towards Cranfield bay.

Directions.—A vessel entering with the flood tide must, particularly at night, be careful not to be set to the eastward of the line of the leading lights, and to starboard her helm so soon as the low *red* light in Haul-

bowline is seen, as the leading line is nearer the Cranfield shore than Haulbowline lighthouse; the buoys in the day are an efficient guide.

A vessel running for lough Carlingford in thick weather should endeavour to make the land to the eastward of the entrance, where the coast is more free from outlying dangers than it is either off the entrance or to the westward of it, and not to approach nearer than the depth of 14 or 15 fathoms until her position is well ascertained. In clear weather the lough is readily distinguished by Carlingford mountain on the westward, and the Mourne mountains to the eastward, with Haulbowline lighthouse standing conspicuously in the entrance.

In daytime, having made out the entrance, bring all the buildings on Greenore point open west of Haulbowline lighthouse, bearing to the northward of N.W. $\frac{1}{2}$ N. to clear Hellyhunter rock, off which is a black buoy, which must be left on the starboard hand; when the leading lighthouses are in line N.N.W. $\frac{1}{4}$ W. keep them so, and steer between the buoys marking the channel, leaving the black buoys on the port hand, the red on the starboard.

At night, having made out the entrance, avoid Hellyhunter rock by keeping Greenore light in line with or just open west of Haulbowline light N.W. $\frac{1}{2}$ N., and bring the leading lights in one N.N.W. $\frac{1}{4}$ W., which will lead over the bar in 18 feet; when the low red light in Haulbowline lighthouse is seen steer for Greenore light, leaving on the starboard hand the bell buoy of New England rock and the red buoy of Vidal rock, and on the port hand the black buoys off Haulbowline and Blockhouse island; when the inner leading light is obscured, haul to the westward, and anchor in 6 or 7 fathoms, or proceed up past Greenore point and anchor when Greenore revolving light and pier light are in line.

A stranger should not enter this harbour at night until the channel inside the bar is properly marked.

Anchorage.—Good anchorage in 6 to 7 fathoms sand will be found with Haulbowline lighthouse just open east of Blockhouse island, S.E., and Green island anywhere between Greencastle and Greencastle point.

Also beyond Greenore point in 4 to 6 fathoms, with Greenore point South and Green island showing between the leading lights.

KINGSTOWN HARBOUR.

(By Staff-Commander James H. Kerr, R.N., in charge of Admiralty Survey, 1874.)

Kingstown harbour, since its examination by Captain Frazer in 1844, has silted up with 4 feet of mud on the eastern side; and to the same amount, but of sand, south three-quarters of a cable from the west pier head and just north of the fairway, where there is a patch of 16 to 18

feet sand extending W.S.W. a cable into the harbour. The western part of the harbour remains nearly as in 1844, except an accumulation of a foot of mud along the line of wall immediately west of the west light, and extending half a cable off.

Outside the harbour, off the east side of the east pier, there is no change. From the shore to the first angle of the west pier, a distance of half a-mile, an accumulation of 3 to 6 feet of mud exists, probably caused by the drainage of the town into the still water there; off the next 1,000 feet, which has an east and west direction, the ebb tide from Dublin bay has increased the depth 3 to 6 feet within half-a-cable of the pier; the material carried from here, together with mud brought by the current, appears to be deposited around the west pier head, and has formed within the harbour the 17 feet bank of sand before mentioned; and the weak ingoing stream towards the south side of the harbour has probably deposited the 4 feet of mud there; there is no outgoing stream from the harbour.

The greatest depth of water in the harbour is 22 to 25 feet within the east pier lighthouse, around the moorings appropriated to H.M. guardship. For 1,000 feet within these moorings there is a depth of $20\frac{1}{2}$ feet, where vessels may lie with their own anchors ahead and stern chains to the pier.

In the western portion of the harbour there is bad holding ground, and the sea which sets in with easterly gales makes the anchorage unsafe. A heavy large-linked safety chain is placed across the harbour in a northerly direction at $1\frac{1}{2}$ cables from the south-west side of the harbour for vessels' anchors to catch in, in the event of their dragging.

RIVER LIFFEY.

The bar of the Liffey was examined in August, 1873.

The depth over the bar has increased $2\frac{1}{2}$ feet since 1856, and the least depth now is $15\frac{1}{2}$ feet over a breadth of nearly 2 cables. There is a depth of 12 feet and upwards over a breadth of 4 cables.

Buoys.—Three black buoys mark the north side of the channel over the bar, and one red buoy the south side of it; the space thus marked includes $11\frac{1}{4}$ to 16 feet.

To mark the best channel over the bar of $15\frac{1}{2}$ feet, six buoys would be required.

Within Poolbeg lighthouse the Mumbles has been dredged to the depth of $18\frac{1}{2}$ feet.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
71	ADRIATIC—Trieste Bay—Grado	Alteration in Fog-Signal.
72	ADRIATIC—Trieste Bay—Salvore Point Light-house	Alteration in Fog-Signal.
73	AUSTRALIA—East Coast—Queensland—Cape Bowling-Green	Establishment of permanent Light.
74	AUSTRALIA—East Coast—Cumberland Islands—Three Rocks, &c.	Discovery of Shoals.
75	AUSTRALIA—Inner Route to Torres Strait	Establishment of Beacons on Reefs and Islands.
76	UNITED STATES—Maine—Cape Elizabeth Light-house	Alteration in Fog-Signal.
77	CAPE BRETON ISLAND—Cape North	Establishment of a Light.
78	CAPE BRETON ISLAND—Great Bras D'Or Lake—Cape George	Establishment of a Light.
79	CEYLON—West Coast—Caltura	Discovery of a Coral Shoal off.
80	CEYLON—West Coast—Barbervyn Island	Discovery of a Rock off.
81	SOUTH AMERICA—West Coast—Guayaquil River—Espanola Point	Establishment of a Light.
82	UNITED STATES—Maine—Rockport Harbour	Establishment of a Light.
83	UNITED STATES—California—Piedras Blancas	Establishment of a Light.
84	UNITED STATES—Columbia River—Point Adams	Establishment of a Light & Fog-Signal.
85	FRANCE—North Coast—Trouville	Alteration in Lights.
86	CHINA SEA	Position of Baglan Bank.

NAUTICAL NOTICES.

71.—ADRIATIC.—*Trieste Bay.—Grado.*—The following alteration has been made in the fog-signal employed in the Grado light-vessel. The fog-bell has been superseded by a *steam trumpet*, which in thick or foggy weather will sound a blast of *five seconds'* duration, with alternate intervals of *five seconds* and *forty-five seconds* between the blasts. In calm weather the trumpet should be heard from a distance of about six miles.

72.—ADRIATIC.—*Trieste Bay.—Salvore Point Lighthouse.*—The following alteration has been made in the fog-signal at the lighthouse on Salvore point. The fog-bell has been superseded by a *steam trumpet*, which in thick or foggy weather will sound a blast of *ten seconds'* duration, with an interval of *thirty seconds* between each blast. In calm weather the blasts should be heard from a distance of 10 miles.

73.—AUSTRALIA.—*East Coast.—Cape Bowling-green.*—With reference to Nautical Notice, No. 42 (March, 1874), on the establishment of a temporary light on Cape Bowling-green, further notice has been given that the tower is now completed and a light exhibited therefrom. The light is a

revolving white light of the third order, attaining its greatest brilliancy every minute, elevated 75 feet above the sea, and should be seen 14 miles. The light-tower, 73 feet high, is circular and painted white. Position, lat. $19^{\circ} 19' 20''$ S., long. $147^{\circ} 27' 40''$ E. The temporary light has been discontinued.

74.—AUSTRALIA.—*East Coast.*—*Cumberland Islands.*—*Three Rocks and K 2 Isle.*—The master of the schooner *Heath* reports a shoal as extending a considerable distance to the north-westward from Three Rocks, Cumberland islands, also that the reef of K 2 isle extends further to the north-west than was previously supposed.

75.—AUSTRALIA.—*East Coast.*—*Inner Route to Torres Strait.*—Beacons are now erected upon the following reefs and islands in the Inner Route leading to Torres Strait:—Vessels bound northwards must leave those beacons which are red and triangular on the port hand, and those that are black and square, on the starboard hand. Port side, bound North: Red and triangular. Starboard side, bound North: Black and square.

Hope Islands.

a reef, north-west end.

b reef, west end.

c reef, north end.

c reef, west side.

d reef, centre.

Cole Islands and Howick Group.

r reef. N.B.—A detached rock, about a quarter of a mile long and 60 yards wide, lies $2\frac{1}{2}$ cables north-east of this reef.

s reef, west side.

Pipon Islands.

South-east extremity of the surrounding reef.

Claremont Isles.

d reef, east end. A second and smaller beacon is erected on this reef to the northward of the other, to assist in distinguishing the reef.

e reef, centre.

f reef, centre.

Heath rocks, centre.

Chilcott rocks, centre.

c reef, south-west extreme.

g reef, south-west extreme.

i reef, west side.

m reef, west end.

No. VI. reef, south-west-end.

No. VII. islet, west side.

Reef in lat. $18^{\circ} 18' 30''$ S., at west side.

tt reef, west side.

v reef, south-west end.

76.—UNITED STATES.—*Maine.*—*Cape Elizabeth Lighthouse.*—The following alteration has been made in the fog-signal at the lighthouse on Cape Elizabeth:—The fog-whistle has been superseded by a siren (steam trumpet) of the second class, which in thick or foggy weather will give *two* blasts of *five seconds'* duration each, with an interval of *eight seconds* between them, followed by a pause of *forty-two seconds*, every minute—in the same order as heretofore given by the whistle. In case of accident to the siren, the whistle will be sounded.

77.—CAPE BRETON ISLAND.—*Cape North.*—On the opening of the navigation of the River St. Lawrence a light will be exhibited from a lighthouse recently erected on Money point, Cape N. The light will be a *revolving* light showing *red* and *white* alternately *every forty-five seconds*, elevated 74 feet above high water, and should be seen 14 miles. The lighthouse, 36 feet high, is a square wooden building, with a tower erected on it and painted white. Position, lat. 47° 2' 10" N., long. 60° 23' 30" W.

78.—CAPE BRETON ISLAND.—*Great Bras D'Or Lake.*—*Cape George.*—From the opening of the navigation a light will be exhibited from a lighthouse recently erected on Cape George, west side of the entrance to St. Peter inlet. The light will be a *fixed white* light, elevated about 50 feet above high water, and should be seen 12 miles. The lighthouse is a square wooden building, 20 feet high, painted white. Position, lat. 45° 44' 30" N., long. 60° 48' 20" W.

79.—CEYLON.—*West Coast.*—*Caltura.*—Information has been received of the existence of a coral shoal, on which the steamship *J. C. Serenson*, drawing 21½ feet water, struck, when off Caltura, on her passage from Point de Galle to Colombo. This shoal (*Uheliye shoal*) is about three-quarters of a mile long and a quarter of a mile broad. The shoal runs parallel with the shore, and has from 3½ to 4½ fathoms on it, 5½ to 8 fathoms close to on the inshore side, and 9 fathoms close outside. The 3½ fathoms patch is on the southern part of the shoal, from whence Caltura fort bore E. ¼ N., distant 2½ miles.

80.—CEYLON.—*West Coast.*—*Barberyn Island.*—A rock (*Fanny rock*) with 3½ fathoms water on it, and 13 fathoms close to and around it, lies off Barberyn island. From the rock Barberyn island bears E.S.E. distant 2½ miles and Beach hill N.E. by E.

81.—SOUTH AMERICA.—*West Coast.*—*Guayaquil River.*—*Puna Island.*—*Espanola Point.*—A fixed white light is now exhibited on Espanola point. It is elevated 131 feet above the sea, and should be seen 9 miles. The lighthouse is on the summit of the point. Position, lat. 2° 47' 30" S., long. 79° 54' 30" W.

82.—UNITED STATES.—*Maine.*—*Penobscot Bay.*—*Rockport Harbour.*—A fixed red light, of the fifth order, is now exhibited on the south point of Indian island; it is elevated 42 feet above high water, and should be seen 11 miles. The tower is a square brick building painted white, and attached to the keeper's dwelling. Position, as given, lat. $44^{\circ} 10' N.$, long. $69^{\circ} 3' W.$

83.—UNITED STATES.—*California.*—*Piedras Blancas.*—A light of the first order is now exhibited from a lighthouse on Piedras Blancas. The light is a *fixed and flashing* white light, showing a flash *every fifteen seconds*, elevated 168 feet above high water, and should be seen 19 miles. The lighthouse, 105 feet high, is a conical brick building, painted white. Position, as given, lat. $35^{\circ} 40' N.$, long. $121^{\circ} 16' W.$ The rock known as Piedra Blanca bears S.W. from the light.

84.—UNITED STATES.—*Columbia.*—*Point Adams.*—A light of the fourth order is now exhibited from a lighthouse on Point Adams, south side of the entrance of Columbia river. The light is a *flashing* light, showing *alternate red and white* flashes, with intervals of *ten seconds*, elevated 95 feet above the level of high water, and should be seen 15 miles. The tower is square, built of wood, 57 feet high, painted a light buff colour, and rises from the keeper's dwelling. Position, as given, lat. $46^{\circ} 12' N.$, long. $123^{\circ} 58' W.$ In thick or foggy weather a fog-whistle will be sounded as follows:—A blast of *seven seconds'* duration, followed by an interval of *fourteen seconds*, then a blast of *four seconds'* duration, followed by an interval of *thirty-five seconds*. The fog-signal house is 63 yards from the lighthouse in a S. by E. direction.

85.—FRANCE.—*North Coast.*—*Trouville.*—From the 1st April, 1875, the following alteration will be made in the lights at Trouville, viz.:—There will be three lights.

(1.) *Deauville.*—A *fixed red* light, of the fourth order, on the west side of the port, visible between the bearings of S. by W. and E. by S. $\frac{1}{2}$ S., elevated 62 feet above high water, and should be seen 10 miles. The tower is 59 feet high, square, and painted in alternate red and white bands. Position, as given, lat. $49^{\circ} 21' 50'' N.$, long. $0^{\circ} 4' 40'' E.$

(2.) *East Pier.*—A *fixed green* light, of the fourth order, near the end of the East pier, and bearing N. by W. $\frac{1}{4}$ W. 547 yards from Deauville light elevated 33 feet above high water, and should be seen 7 miles.

(3.) *West Pier.*—A *fixed tidal* light, of the fifth order, from a white iron turret near the end of the West pier. This light shows white seaward from S.W. by S. through south, east, and north to N. by W. $\frac{1}{4}$ W., and red when bearing from N. by W. $\frac{1}{4}$ W. through west to S.W. by S. It is elevated 26 feet above high water, and the white light should be seen 8 miles.

This light will be exhibited only when there is a depth of at least 6½ feet through the whole length of the channel.

Note.—In making the port, the red light of Deauville in line with the green light of the East pier bearing S. by E. ¼ E. will lead through the fairway channel outside the port, but when the vessel has passed out of the white light of the West pier into the red light, it will be necessary to keep a little to the westward to take the fairway between the piers. The eastern limit of the red light of Deauville passes about two-thirds of a mile to the westward of the western extremity of the Ratelets, so that while the light is in sight the vessel is clear of that danger.

86.—CHINA SEA.—*Raglan Bank.*—Information has been received, that the vessel *Jackmel* has passed near a shoal supposed to be the same as that seen by the *Lady Raglan* in 1858, in lat. 9° 28' N., and long. 109° 25' E., and subsequently unsuccessfully searched for by H.M.S. *Rifleman*, in 1863. The *Jackmel* passed close to the shoal, on which the sea was breaking heavily, and the position assigned to it by that vessel is lat. 9° 24' N., long. 109° 26' E. The position of the danger must be considered as approximate, and caution is necessary when navigating near it.

CHARTS, &c., Published by the Hydrographic Office, Admiralty, to the end of February, 1875, and Sold by the Agent, J. D. Potter, 81, Poultry, and 11, King Street, Tower Hill.

No.	Scale.			a.	d.
38	m =	various	Arabian Sea :—Muscat to Karáchi with plans.	2	6
687	m =	3·0	Africa, East Coast :—Kisswere Harbour	1	6
498	m =	0·6	South America, East Coast :—Piedras Negras Point to Santa Lucia River, approaches to Monte Video ...	1	6
665	m =	1·5	Africa, East Coast :—Zanzibar Harbour and approaches	2	6
689	m =	{ 3·0 1·5 }	Madagascar, South-East Coast :—Fort Dauphin, St. Lucia and Ytapère bays,	1	0
640 a. b. m	=	0·5	Africa, East Coast :—Pangani to Ras Kimbiji, 2 sheets	5	0
J			China, Siam, and Phillipine Islands to Japan—Index sheet	0	6
17			Plan of Basilisk Harbour, Tapona Island, has been inserted on this chart.		

Books.

The China Sea Directory. Vol. III. 10 0

OUR OFFICIAL LOG.

DANISH LIGHT-VESSELS.—The following telegrams have been received by the Board of Trade from the Danish Marine Ministry :—Feb. 13 : The light-vessels *Kobbergrund* and *Laso Reude* have left their stations to-day on account of ice.—Feb. 14 : The light-vessels *Knoben* and *Schultsgrund*, in Kattegat, have left their stations to-day on account of ice.—Feb. 14 : The light-vessel *Trindelen*, in Kattegat, has left her station yesterday on account of ice.

REGULATIONS FOR PREVENTING COLLISIONS IN SEA CHANNELS LEADING TO THE MERSEY.—These regulations are established by the authority of Act 37 and 38 Vict., chap. 52. Any General Regulations for preventing collisions at sea for the time being in force under the provisions of the Merchant Shipping Acts shall be construed as if the following regulations were added thereto ; that is to say—(1) Every steamship, and every vessel in tow of any steamship, when navigating in the sea channels or approaches to the river Mersey, between the Rock Lighthouse and the furthest point seawards to which such sea channels or approaches respectively are for the time being buoyed on both sides, shall, whenever it is safe and practicable, keep to that side of the fairway or mid-channel which lies on the starboard side of such steamship or vessel in tow. (2) Every ship at anchor in the said sea channels or approaches within the limits aforesaid, shall carry the single white light prescribed by Article 7 of the General Regulations for preventing collisions at sea, made under the authority of the “ Merchant Shipping Acts Amendment Act, 1862,” at a height not exceeding twenty feet above the hull, suspended from the forestay, or otherwise near the bow of the ship, where it can be best seen ; and in addition to the said light, all ships having two or more masts shall exhibit another similar white light at double the height of the bow light, at the main or mizen peak, or the boom topping lift, or other position near the stern where it can be best seen.

NEW LIFEBOAT AND ROCKET LIFE-SAVING APPARATUS STATIONS IN THE BLACK SEA.—The Board of Trade have received information through the Secretary of State for Foreign Affairs, that the direction of the Nicolaiev district of the Russian “ society for rendering assistance at the time of shipwreck,” have added the following lifeboat and rocket life-saving apparatus stations to the Dniestroosky (Lunan) station, established in 1873, viz. :—1st. Ochakoff Station, situated on the point near the town of Ochakoff, and supplied with a Danish life-raft, to be replaced in the summer of 1875 by a six-oared lifeboat, manned by pilots belonging to the Nicolaiev pilot corps. 2nd. The Eupatoria Station, in the town of Eupatoria, supplied with a ten-oared boat, on the

"Beake" system, manned by the inhabitants and by local fishermen. In 1873 this station is to be supplied with a transport cart. 3rd. The Yalta Station, in the town of Yalta, supplied with a lifeboat on the "Forrest" system, called the *Grand Duchess Maria*, in honour of Her Imperial and Royal Highness the Duchess Maria of Edinburgh. This boat is manned by inhabitants and local fishermen. 4th. A station at Theodosia, supplied with a rocket apparatus, and to be supplied next year with a boat. 5th. The Poti Station, one mile south of the town of Poti, supplied with a ten-oared boat and transport cart, manned by inhabitants and local fishermen. The signals for mustering the crews at all the stations are as follows:—During the day time, the flag of the society hoisted over the boathouse, and two shots; during night time, a lantern replaces the flag, and signal by gun is the same as during day time; after the shots, a bell is tolled. The society have also acknowledged the receipt of Her Majesty's Consul at Nicholaiev of the contributions left with him by British shipmasters for the society during the year 1874, amounting to roubles 97.16.

SHIPPING AND MERCANTILE GAZETTE CORRESPONDENCE.

(Reprinted by special arrangement with Sir WILLIAM MITCHELL.)

PILOTAGE.—I arrived off Eyemouth, and kept my union jack flying at the foremasthead all day for a pilot. As no pilot came off, I took the assistance of a steamer entering the port at night, which towed me in and alongside the quay. Am I liable to pilotage?—[The regular pilot signal having been made as prescribed by the Merchant Shipping Act, 1878, and no pilot having offered his services, our correspondent would not be legally liable to pay the pilotage fee.]

SALVAGE SERVICE AND DERELICT.—On Sunday, January 25, a French fishing smack, being twenty miles N.N.E. of Étaples, saw at a certain distance an English barque having her flag half-mast and her foremast fallen. The master immediately directed his ship to the barque (which was found afterwards to be the *Kathleen*, by the log-book of 1871), and saw that she was abandoned, probably after a collision, as she had a hole about the load water-line. The barque filling with water, the master tried to do the best he could, and to take on board his ship all the rigging to lighten her, as also to save them in case the ship should sink in towing. About five o'clock at night, when the smack had taken the barque in tow for Boulogne, nine English fishing smacks came, and by force compelled the first salvors to go back to their vessel. The master did not know what to do, but came back to Boulogne, where he gave all he saved to the Custom House, and made his verbal report, as

he could neither read nor write, nor could his crew. What is to be done; and has the master any claim for salvage?—[The owner, master, and crew of the French fishing vessel which first boarded the derelict, and were subsequently deprived of possession, by the violence of other salvors, would be entitled to salvage, and they should prefer their claim in the Admiralty Court.]

COMPULSORY PILOTAGE.—My schooner, bound from Berwick for Rochester, arrived off the mouth of the Medway, when a waterman came on board, and I agreed to pay him to assist the vessel up the river. Subsequently a pilot's boat came across my bows and offered his services. I refused, fully believing that I was not compelled to take a pilot. I am now called upon for £2 17s. amount of the pilotage, or he will sue me before the magistrates for double rate. Am I right in refusing to pay pilotage? If so, is it not the pilot's duty to turn the Waterman off at once, or tell me at the time of his offering his services?—[Any exempted ship navigating within a pilotage district which, after a qualified pilot has offered his services or made a signal, continues to employ an unqualified pilot to pilot her, incurs a penalty of double pilotage. (Merchant Shipping Act, 1854, Section 353.) A qualified pilot may supersede an unqualified pilot, but the master may pay to the unlicensed pilot a proportionate part of the pilotage fee. (Section 360).]

PILOT-BOAT DAMAGED.—A pilot-boat goes out into a roadstead to put a pilot on board a brigantine, which latter had a flag flying for same. In nearing her, the pilot boat passes under her stern, in order to get near enough to put the pilot on board. She strikes the brigantine's rudder with her bowsprit, and sustains considerable damage to herself on the star-board side, and renders her in such a sinking state that she was obliged, after temporarily repairing the leak, to put back for safety. Is not the brigantine liable to repair the damages done to the pilot-boat?—[To fix the responsibility on the master of the brigantine, it would have to be proved that he contributed to the accident, or might have kept his ship with just sufficient headway to have averted the collision. It is a question of seamanship, which cannot be determined without knowing all the facts of the case. If the brigantine was hove to, and could not have given way in time, her owner would not be liable for the damage to the pilot boat.]

SEAMEN'S CLOTHES AND EFFECTS.—My ship, bound from Sunderland to Rio de Janeiro, put into Plymouth Sound with the crew refractory, they alleging unseaworthiness of the vessel. On a survey being held, their assertions were proved to be, as in many similar cases lately, utterly unfounded, and they were sentenced to ten weeks' imprisonment with hard labour. Their clothes and effects were landed

from the vessel, but the magistrates made no order respecting them, and the shipping-office authorities at Plymouth refused to take them into their possession. Can I sell them, under the 253rd Section of the Merchant Shipping Act, to reimburse me in part for the heavy expenses I have been put to?—[Under Section 253 of the Merchant Shipping Act, 1854, the clothes and effects of deserters may be sold for the benefit of the master or owner; but if they were convicted for refusing to proceed to sea in the ship (*vide par. 2, Section 243, of the Act*), the clothes would not be forfeited, therefore should not be sold. Shipping-offices are not warehouses for storing seamen's effects.]

AVERAGE ADJUSTMENT.—A vessel is chartered in London to load at Batavia for Antwerp, Holland, Bremen, Hamburg, London, Liverpool, Bristol, &c., to call at Falmouth for orders. She had her orders direct for Holland. After sailing she got stranded, was got off, and, when discharged and surveyed, recommended to be sold, the cost of repairs, without being opened, exceeding her value. The cargo was sent on to Holland at an additional freight. Where should the general average adjustment be made? Charter says, "In case of general average, the same to be settled according to maritime custom." Should it be made out in Holland, where the cargo was sent, or in London, and claim made on charterers for general average? The charterers had the liberty of underletting the whole or part of the ship, and the captain was to sign clean bills of lading at any rate of freight. What does maritime custom mean? In this case it is of great importance to the owner, for, according to Dutch statement, the extra freight is charged to owner of the condemned ship; and, in addition, the portion of freight advanced to him before his ship sailed, and for which he paid the insurance, it is asserted is to be deducted from the nett proceeds of general average. Out of the gross proceeds of sale of ship and stores, amounting to about £1,900, which was paid at Batavia principally for cargo, there will only be about £250 left for the owner, after the above deductions by Dutch statement. if he is compelled to settle in Holland.—[By the law of Holland, when the entire breaking up of the voyage on the passage happens at a place out of the country, the claim, adjustment, and apportionment of the loss are to be made at the port where such breaking up occurs. "If the ship cannot be repaired, the master is bound on his own account, and without having any claim for increased freight, to hire another vessel in order to forward the cargo to its place of destination." He would, however, have a claim on the cargo for average. The adjustment, therefore, should take place where ship and cargo part company. This is the law of England, America, Portugal, Sweden, and Norway.]

THE NAUTICAL MAGAZINE.

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APRIL, 1875.

STARVATION.

AN article appeared in a recent number of the *Nautical Magazine* on the case of cannibalism in the crew of the ill-fated ship *Cospatrick*; and an interesting question was raised, whether the fact of drinking salt water created an irresistible craving for human food. Before endeavouring to answer this question, it may, perhaps, not be uninteresting to the readers of the *Nautical* to say a few words on the general question of starvation; and, briefly, to explain why life is inevitably extinguished if food and drink be withheld for a certain time. It is very strange that the general public should be so absolutely ignorant of the most elementary principles of physiology; but it is a fact that it is a branch of education very much neglected at the present day. Every one knows that it is absolutely necessary that he should eat and drink in order that he may live; but the majority of people know very little, and care still less, about the reason why.

A living, active man constantly exerts mechanical force; gives off heat, evolves carbonic acid and water, and undergoes a loss of substance. It is self-evident, then, that if this state of things continued for a long time, the man would dwindle away to nothing. Long, however, before the effects of this gradual diminution of substance becomes apparent to bystanders, they are felt by the subject of the experiment in the form of those imperious sensations called hunger and thirst. These are the inner admonishers that tell us there is something wanting in the system, and that we must supply the deficiency or perish.

The human body is often, and, to a certain extent, justly compared to a steam-engine; the food being the fuel. Now, in a steam-engine, what

takes place? The combustible material or the coal is burnt; that is to say, it unites with the oxygen of the atmosphere, forming carbonic acid and water, and in thus uniting, it sets free a large quantity of energy or force stored up in the coal, and originally derived from the sun's rays acting on the vegetation that existed on the earth some millions of years ago. This energy takes the form of heat causing the water to be converted into steam, and of mechanical force by means of which the engine does a certain amount of work. In the animal machine very much the same takes place. The food that we take into our system after being properly digested, is taken up and enters that mighty river of life, impetuously rushing through every part of the body, termed the blood. Here a certain portion of it comes into contact with the oxygen we inhale by our lungs, and is literally burnt into carbonic acid and water, and in the act of burning sets free a large quantity of heat which keeps up the temperature of the body, and a large quantity of force, which enables us to perform muscular exertions, which enables our brain to think, our hearts to beat and our organic functions to be properly performed. Just as the energy set free on burning coal was originally derived from the sun's rays acting on a past vegetation, so the energy which we derive from the chemical changes in food, owes its origin to these same rays acting on the vegetation of the present day—the sun in both cases is the real motor power.

So far there is a close analogy between the two machines, but there is a vital difference. When the coal is all burnt, the fire dies out, and the steam-engine stops. Not so with the living machine. If all food be withheld, it still possesses the power of performing its functions for a longer or a shorter period, and this power it exerts by using up its own substance by replenishing the fire with its own tissues, by feeding, so to say, upon itself. That mysterious condition termed Life consists of a perpetual process of flux and metamorphosis, which conducts all the tissues of the body through a regular cycle of changes, beginning at the deposition of new material, and ending in this material being finally cast out from the system in an effete and worthless state. Thus life is made up of a continued process of waste and repair; in the physical no less than in the moral life there is no such thing as rest—stagnation is ever death. We are continually dying in pieces, and as continually being born again. The worn-out tissues of the body find their way into the blood, come into contact with oxygen, and are burnt and cast out from the system as carbonic acid, water and urea, and thus furnish the force and heat necessary to sustain life. We may thus consider that food has a two-fold office to perform, a portion of it being burnt directly in the blood, and the other portion replenishing and renewing our worn-out tissues, and that the energy by which life is maintained is derived both from the combustion of food and of the particles of the body itself.

It will be at once apparent that if food be withheld life can only be kept up by the destruction of the body itself, and that whenever this destruction reaches a certain maximum death must ensue. It has been found by the experiments of Chossat, that death always takes place whenever the waste reaches an average proportion of two-fifths of the weight of the body—that is to say, if an animal weighs 100 lbs., it will die when its weight is reduced to 60 lbs. How long it takes to reach this maximum we cannot say for certain, as it varies with different individuals, and depends on the circumstances in which they may be placed. The cycle of change may be completed in a longer or a shorter period, and death, moreover, may ensue at any period before it is completed; but we know for a certainty that life cannot be prolonged when once it is accomplished. If an animal be very fat, however, sometimes the loss sustained is greater; thus a case is reported of a fat pig which was buried under thirty feet of chalk for 160 days; his weight fell in that period no less than 75 per cent. The same, no doubt, would hold good, to a certain extent, in the human subject; it would, probably, have taken a deal of starving to put an end to the “Claimant,” ere the salutary effects of a prison *regimen* caused his “too solid flesh to melt,” and materially diminished his prodigious girth. It is, therefore, quite evident, that those reported cases of prolonged fasting, which now and again crop up, and are eagerly believed in by a too credulous public, are totally absurd and incredible. Wales is proverbially celebrated for fasting girls; they appear to be one of the institutions of the country. Our readers may remember that a short time ago there was a Welsh fasting girl, who was reported to have lived two years without food of any kind, and yet, marvellous to relate, she continued not only in good condition, but actually grew considerably. Visitors flocked in thousands to feast their eyes on this living miracle of the nineteenth century, leaving behind them a substantial token of their belief, in the shape of a coin of the realm; so that she became a source of considerable gain unto her parents. At length, however, owing to the doubts of the sceptical, a strict watch was set round about her, to see that she did not eat, and what was the consequence? She grew “small by degrees, and beautifully less,” and on the ninth day died. Thus, at last, the imposture is detected, science is vindicated; but the child is dead!—yes, actually starved to death; the victim of her own delusions, and of the ignorance, fraud, and superstition of those round about her. It is almost incredible that such a thing could have happened in the present enlightened age. Surely, such a stale trick could have been detected without killing the unfortunate child. If the mischievous fairy Puck could have witnessed this case, well might he have exclaimed, “Ah, me! what fools these mortals be.” We are strongly of opinion that if all alleged miracles, whether the “Sacred hearts” of the present

day, or those reported in the earlier ages of the world, in that mystic period, in which, according to a recent writer, "reality melted into fable, and invention unconsciously trespassed on the province of history," could be subjected to similar rigid tests they would equally vanish, and, "like the baseless fabric of a vision, leave not a rack behind."

As a general rule, it is found that if both food and drink be withheld, the human body, under ordinary circumstances, daily wastes $\frac{1}{4}$ th of its substance, the extreme limit, therefore, 40 per cent., would be reached in about ten days. Of course, if a person is kept perfectly quiet, and the room kept warm, the waste is reduced to a minimum, but the limit will inevitably be reached within a certain time. If water be given, life can be sustained for a longer period, and, according to Dr. Brinton, the absolute date of death may be estimated as ranging from ten to twenty days, with a maximum of twenty-three days, but the majority of cases would probably be bounded by fourteen days. Let us turn for a moment and consider the case of the hibernating animals such as the Marmot. They begin their winter sleep well clothed in fat; they are plunged into a deep, dreamless sleep; their hearts beat feebly, about twice in a minute, and their lungs expand but slightly and seldom; their temperature is lowered, and they are brought to the condition of cold-blooded animals; the carbonic acid they evolve is lessened, and their growth is totally arrested. Now, it is a curious fact that at the end of their sleep it is found that they have lost nearly 40 per cent. in weight, a proportion nearly as great as that attained in death by starvation, so that the rule appears to hold good throughout the animal creation. It should never be forgotten, then, insufficiency of food will cause death at just the same point as total deprivation, only that the time taken in bringing about the result would be longer.

In cases of starvation, the feeling of hunger gradually increases to a ravenous degree, causing acute pain. As time goes on, however, this feeling becomes less prominent, gradually changing into a feverish, often delirious, condition, in which the whole being is possessed by the one idea of food, so much so that mothers have, ere now, actually disputed for the flesh of their dead children. Increasing debility of mind and body supervene, till death finally closes the painful scene. It must always be remembered that at a comparatively early stage of the process of starvation, the digestion is very much interfered with, so that in cases of fasting it is necessary to be careful to give food in very small quantities at first till the stomach regains its power. It is best to commence with a few spoonfuls of concentrated soup or beef-tea, given every quarter of an-hour, gradually increasing the dose. Let us now briefly consider those cases in which water as well as food is withheld; where the pangs of hunger are further aggravated by the

agonies of thirst. Water forms about 70 per cent. of the entire weight of the body—it enters largely into the composition of every tissue of the body, even of such apparently dry parts as the bones and the teeth. It is, indeed, an indispensable agent in all those changes of composition and decomposition on which life depends, and is therefore as absolutely necessary for the maintenance of life as food, if not more so. Now this water we are constantly throwing off from the system—every time we breathe we throw off a large quantity as vapour. A still larger amount daily escapes from the skin; which becomes evident to the senses on a hot day when we perspire; but even when we are perfectly quiescent it is calculated that from two to three pounds are daily evaporated in this manner. It is by this evaporation that the constant temperature of the human body is preserved, so that our blood remains precisely at the same degree of heat, whether we are shivering in the Arctic Regions, or sweating and groaning under the intense heat of the Tropics. It is therefore clear how a slight diminution of the proper quantity will seriously affect our comfort, and what torments are felt if it be long withheld. The well-known fable of Tantalus shows that the ancients considered thirst to be one of the greatest tortures that could be inflicted. During abstinence from food the organism can still live upon itself for a given time, but during abstinence from liquids it has no such source of supply within itself—thirst is therefore far more terrible than hunger. It is probable that three or four days absolute privation from drink, unless in a very moist atmosphere, will cause death. It is true that the survivors of the *Cospatrick* lived for nine days without either food or water, but it is stated that their clothes were constantly wet, and that from the second day each man drank his own urine, and moreover that on the sixth day they drank the blood of the dead. It may be remarked that by keeping the surface of the body wet, not only is the evaporation from the skin checked, but a certain amount of water is actually absorbed from the skin into the blood. Hence, therefore, it is recommended that the clothes should be kept constantly wet in these cases. We fear, however, that unless the weather is very warm the abstraction of animal heat involved in wearing wet clothes, is likely to accelerate death.

The primary cause of thirst, may be said to be a deficiency of water in the organism, but the immediate cause of the sensation is a dry feverish condition of the mouth, throat, and palate; the tongue cleaves to the roof of the mouth, the voice becomes hoarse, the eyes flash fire, the breathing becomes difficult, the sleep becomes fitful and distressed by dreams, and finally delirium and death follow. It is noticed that the dreams generally have reference to water; thus the men shipwrecked in the *Medusa* dreamt constantly of shady woods and running streams.

After suffering from thirst, it is a bad plan to endeavour to quench it in the first place with cold water, as it stimulates a greater flow of blood to the parts, and thus for the time being aggravates the sensation ; but if a little tepid water or milk and water be taken relief is soon felt. We will now consider the question of drinking salt water ; has it a peculiar tendency to cause a desire for *human* flesh ? We apprehend not. In order to understand the peculiar action of water containing a large quantity of salt, it will be necessary to say a few words on the well-known laws of exosmosis and endosmosis. If a bladder be filled with water and placed in an empty vessel none of it will pass out. If, however, we fill the vessel with some liquid having a different density to water, we find that the outside liquid will penetrate into the bladder, whilst some of the water will pass outside. This interchange will continue till both fluids acquire the same density. The passing out of the water is called exosmosis, whilst the rushing in of the other liquid is called endosmosis. This process always takes place whenever an animal membrane separates two fluids of different specific gravities, and the fluid with the least specific gravity will pass through the membrane with greater rapidity than the other. It is to this law that we owe the absorption of the contents of the stomach into the circulation, and, in fact, the whole of nutrition depends more or less upon it. If, then, we drink a liquid such as water, being of less density than the blood, it is rapidly absorbed, but if, on the contrary, we drink water strongly impregnated with salt the reverse process takes place. The specific gravity of the salt water is greater than that of the serum of blood, consequently the latter passes into the intestinal canal and is discharged. Thus it appears that drinking sea-water not only has no tendency to alleviate thirst, but it actually drains away the water from the system and aggravates the sensation to an intolerable extent. Now it is to be observed both in the case of the crew of the *Cospatrick* and in similar instances, the intense craving seems to have been to drink the blood, and to eat such parts as the liver, which contains a large quantity of blood ; and this, in our opinion, is due simply to an irresistible longing for liquids of some kind or other. No doubt a glass of water or of bitter beer would have been infinitely preferred.

The question was also raised whether men in this condition are morally responsible for their actions. We should say undoubtedly not. In nearly all cases of death from thirst, madness sooner or later supervenes ; due, probably, to the great drain on the blood. Who, then, is competent to draw such a rigid line between sanity and insanity as to say definitely in such cases as these where the one begins and the other ceases ? Even if the reasoning faculties are not much interfered with, the power of resisting temptation is gone ; the will is dormant ; and,

just as in homicidal mania, there is an irresistible impulse to kill, kill, kill, whilst in other respects the man may be apparently sane ; so, here, the irresistible craving for drink bears down all obstacles, and renders the unhappy victims, at the time, unaccountable for their actions. Let us hope that we may never be placed in such a predicament, and if we should be, then let us exclaim with Lear, " Let me not go mad, great Heaven, not mad."

INDIAN PORTS.

THE main system of Indian railways, we are informed by the report upon the material advancement of India, has now approached completion, whereby a network of communication over nearly every part of that vast Empire has been formed ; and, in addition, the construction of main and local roads to operate as feeders, combined with well-directed lines of canals, make the internal arrangements to correspond with the increasing demands of commerce. The necessity for encouraging sea-borne traffic has been clearly shown, on the occasion of recent famines, to be equally important with that by land. As a means, therefore, of communication between India and the outer world, the harbours and anchorages have been the subject of much attention during the last few years. Their number, if every place frequented by native craft be included, is very considerable, a list having been formed in which as many as 656 are enumerated and described, but it is only possible to take notice of the more important, ranging in their geographical order from Karachi to Chittagong.

The harbour of Karachi, a few miles to the west of the mouths of the Indus, occupies a most important position as a port of Sind and the Punjab, with a large and rapidly increasing trade. Its western half is formed by a long, narrow strip of sand, ending with the rocky promontory of Manora Head ; and its eastern by the island of Kiamari. Thus there are two openings, one between the main land and the east end of Kiamari, called the Chinna Creek, and the other being the main entrance used by ships between the west end of Kiamari and Manora Point. The total cost of these works to the end of the season of 1873-74 is stated at about £450,000, including establishment and taking credit for value of plant and of land reclaimed. The works are nominally completed, though, as the results are developed, some additions will be required. They have effected considerable increase in the capacity of the harbour for shipping. The direct entrance has now permanently superseded the old circuitous channel, and its depth has increased every year. During 1871-72 the number of vessels that arrived at Karachi was 1,021, representing 129,508 tons.

But, besides Karachi, there are at least eight ports on the west coast of India which are capable of being converted into first-class harbours—namely, Poshetra, Seria, Shalbet, Bombay, Jyghur, Viziadrug, Karwur, and Cochin. The two first are in the Gulf of Kach, sheltered from all winds, and capable of receiving the largest ship in the Navy at any time of the tide. They are 800 miles to windward of Bombay, in the south-west monsoon, when the cotton crops require carriage to Europe, but no use has hitherto been made of them. The third harbour, called Chuch Bunder, is on the south coast of Katiwar, about thirty miles east of Din Head. It is formed by Shalbet Island, within which there is a perfectly sheltered harbour with good holding ground in five or six fathoms. Bombay harbour is the best on the west coast, but it still wants suitable accommodation to enable ships to load and unload alongside its wharves.

The problem of sufficient dock accommodation for cleaning and repairing has, however, at length been solved by the creation of one of Mr. Clark's hydraulic lifts at Hog Island. The Bombay Government are, it appears, fully sensible of the value of this work; for the use of which there might, in their opinion, be at any moment the greatest need. It was, however, only in operation for three months, during the years 1872-73, when H.M.S. *Wolverine*, the steamer *Sind*, of the Bombay Marine, and the merchant steamer *Neera* and *Sir Bartle Frere*, were docked upon it. The number of vessels in 1872-73 that arrived in Bombay harbour was 3,048, and 1,889 vessels sailed.

South of Bombay there are four good ports. Jyghur affords facilities for a commercial port, accessible during the south-west monsoon; and Viziadrug is an excellent harbour with similar advantages, and at a trifling expense it might be made a first-class harbour of refuge. Karwur is the port for North Canara, and for the cotton district of Dharwar. It is protected by a point of granite, under the shelter of which there is a safe anchorage during the south-west monsoon, and it is capable of considerable improvement. Mr. Robertson, a civil engineer of eminence, was much struck with the advantages of Cochin, and its splendid backwater. The backwater is of great value as a tidal reservoir to keep the entrance clear, and every foot of water gained in depth over Cochin bar is permanently retained and kept almost unvarying by this splendid tidal reservoir. On either side, the very remarkable mud banks of Marekal and Alepy are most useful as natural harbours of refuge subsidiary to Cochin. Thus Cochin is admirably adapted to become the great western outlet for the trade of South India.

Kolachul is a port on the Travancore coast, near Cape Comorin, and was practically discovered by the coffee planters in the adjacent hills. They found that large ships could sail between some outlying rocks, and ride at anchor to leeward of them in still water. The first ship called

there in March, 1871, and since that date, two other ships have loaded at the port of Kolachul. The place was not visited by Mr. Robertson; he, however, examined Tutikorin, in the Gulf of Manaar, the port for all the large trade of Tinnevely. Here vessels are obliged to lie two and a-half miles from the shore, and the cargoes are brought out in boats carrying twenty tons. The harbour is well sheltered, but it only has a depth of eight feet. There is a stretch of water, seven miles long by four and a-half, a short distance from Tutikorin, and on the south side of the Ramnad promontory, where stands the famous temple of Rameswar. It is completely sheltered by reefs and islands, and has an average depth of from twenty to thirty feet; but the entrance between Musel and Muli Islands has a depth only of two and a-half fathoms, with a sandy bottom. If this entrance was dredged out, so as to admit large vessels, there would be a splendid harbour, infinitely superior to Tutikorin, for shipping the produce of South India. At present it is only occasionally used by coasting craft, and the shores are uninhabited. This harbour has been named Port Lorne.

THE SANITARY CONDITION OF THE PORT OF LONDON.

THE Reports made to the Port of London Sanitary Committee by their Medical Officer of Health (Mr. Harry Leach) show the growing importance of the work undertaken by the Committee, and the necessity for the extension of the system of constant thorough inspections by competent Medical and Sanitary Inspectors. Apart from the inestimable advantage to the Metropolis, and the country at large, to be obtained from such a system, in tracing, and preventing as far as is, humanly speaking, possible, the spread of cholera and other contagious diseases, so apt to be brought into our midst by the seafaring community, such inspections must greatly tend to the comfort and health of the seamen themselves; and by a hearty co-operation with the proper authorities, especially in cases of scurvy, enable steps to be expeditiously taken for carrying into effect the provisions of the Merchant Shipping Acts in this respect.

We have before us the Report of the Officer of Health for the half-year ending the 30th June last, and a supplementary Report for the months of July and August. Taking first the supplementary Report we find that during the two months named, 3,072 vessels were inspected in the river, and the docks on the Thames, out of which in no fewer than 402 cases it was found necessary to require cleansing, or alterations in structure for the purposes of ventilation; three vessels were fumigated; twelve parcels of clothing were disinfected or destroyed; and ninety-six sick men were removed to hospitals. In addition to this, twenty-eight

samples of the drinking water used on various vessels were examined, and in sixteen instances found to be unfit for human consumption.

Turning now to the Report for the half-year, it appears that the district over which the officers extend their operations is eighty-eight miles in length, and comprises eight sets of docks, with an average population of 9,000, and an average number of 1,000 ships in port for inspection. Twelve thousand ocean-going ships and 13,000 coasters are the average number of vessels annually entered, excluding 6,400 sailing and "dumb" barges belonging to the port. In the period embraced by the Report 4,864 vessels of various nationalities (the great majority, 3,348, being British, while 231 were German, and 343 Swedish and Norwegian) were inspected, and in 758 cases cleansing was ordered. In the preceding four months—from the 4th September to the 31st December, 1873—the number of inspections was 1,999, with 338 cases where cleansing was found necessary. The great increase in the number of inspections during the later period was enabled to be carried out by the officer being provided with a small steam launch, which it is stated, has at once trebled the practical usefulness of the system.

Some idea of the real usefulness of the work may be formed from the facts above mentioned, and without going into the further details given, which would be found very interesting were we able to reproduce the Report itself *in extenso*, we may simply endorse the concluding paragraph, that the Sanitary Authority "is gaining the confidence of the Mercantile and Marine communities, and that both are now glad to ask for its aid under circumstances of sanitary danger and difficulty, because the duties entrusted to the officers have, it is believed, been carried out without harassing any class of persons engaged directly or indirectly in the business of the Port of London."

We cannot, however, leave the subject without noticing the methods adopted in the neighbouring continental countries in this respect. Mr. Leach reports that looking to the importance of a Port Medical Officer making himself thoroughly acquainted with the rise and march of cholera, and to know as far as possible whence any importation of this disease may be most likely to come; and looking also to the fact that isolated cases had been introduced into the ports of London, Liverpool, and Southampton from certain continental ports, he, during the year, visited Havre, Antwerp and Rotterdam, as likely to afford fair examples of the system adopted in France, Belgium and Holland. With the assistance of Her Majesty's Consuls at these ports numerous enquiries were made, the results of which are summarized as follows:—

"1st. In respect of French ports the utmost secrecy and mystery prevails, as to the existence of cholera, so that it is almost impossible to obtain exact data on which to form correct conclusions.

"2nd. In respect of Belgian ports, early news as to the existence of the epidemic is not difficult to obtain (either as regards the towns or the provinces), because all medical men are compelled to inform the Secretaries of the Sanitary Commissioners as to the occurrence of any case. It appears, however, that it is not considered advisable to publish exact bills of mortality until after the epidemic has ceased.

"3rd. As regards Holland everything appears, so to speak, 'open and aboveboard!' In Rotterdam, and as I am informed, in other maritime towns, all physicians are compelled, under a heavy penalty, to send immediate notice to the Burgomasters whenever a case of cholera or choleraic diarrhoea occurs. This official at once advertises the fact in the daily journals, communicates the particulars thereof to the Sanitary Commission, and virtually 'quarantines' the house in which the patient is residing, by directing the residents to place in their windows a distinguishing card or mark."

The information thus obtained is highly valuable as affording to some extent a basis upon which to work, in denoting that it is necessary to bestow especial care in dealing with arrivals from the ports of some countries, while in others, where precautions are taken to prevent, at all events, the spread of the disease, it may not be necessary to act with rigour. When similar reliable information has been obtained as regards the practice adopted in other countries, much will have been done towards increasing our knowledge on the subject, and guarding, as far as possible, against a possible outbreak of a dire calamity at any time. In the meantime we can only say that the Sanitary Commission of the Port of London have our warmest sympathy in their work, and that we should be glad to see their operations increased to such an extent as would ensure every vessel visiting a port, infested with, or suspected of, cholera, or other contagious diseases, being carefully looked to.

ATLANTIC STEAM FERRIES.

By E. HEPPLER HALL.

THE CUNARD LINE.

IN the palmy days of British exploration and discovery, when Anson, Cook, and Blake, and others scarcely less famous among "the stalwart sons of the sea-girt isle," made their stately circumnavigations of the globe, and consumed a good slice of even a sailor's lifetime in accomplishing the astounding feat, not one of them, in the wildest flight of his imagination, as he poked along in his blunt-bowed, square-sterned, high-pooped, antiquated craft,

could possibly have conceived of a traveller putting a "girdle round the earth" in a hundred days, or of practically bridging the stormy North Atlantic in ten. How would these doughty old mariners, tricked out in their long queues, knee-breeches, immense square-toed silver-buckled shoes, have stared had such a prediction been ventured in those days of maritime adventure. Yet all this, and even still more extraordinary things have come to pass. A namesake, and follower of the illustrious circumnavigator, now issues his coupon tickets round the world; and floating palaces, now cross and recross between Queenstown and Sandy Hook in little more than a week. We propose to sketch briefly the rise and progress of the North Atlantic Steam Fleet; this we shall best do by sketching the past history and present condition of the several lines of steamers composing the fleet now plying between the several ports of Great Britain and the northern continent of America. These are known as the "Cunard," "Inman," "Allan," "National," "Guion," "Anchor," "White Star," "North German Lloyd," "Dominion," and "American" lines.

The Cunard-Company, both on account of its being the first in operation, and its present standing is fairly entitled to our first notice; the wholesome old maxim, "first come first served," will apply with especial propriety here, for not only were the Cunard Company the first to enter the lists as common carriers by steam on the North Atlantic, but they have maintained that proud position over a period of a third of a century, not less by the safety and regularity with which their ships have been navigated, than by the punctuality and strict observance of discipline and duty which has marked the discharge of their very numerous and oft-times intricate obligations ashore.

The story of the origin of the Cunard Company is more than a twice told tale. It has become as well known as the story of George Stevenson's first locomotive, Watt's experiments with the family tea-kettle, or Fulton's first essays on the Hudson river. Our sketch, would, however, be still less worthy its title and promise without a passing recapitulation of the more important incidents connected with the early history of this line. The occasion for the first trip of a Cunard steamer was well chosen. The 4th July (known among our transatlantic brethren as Independence day), 1840, witnessed the sailing of the *Britannia*. While the citizens of the young Republic were firing guns, exploding fire-crackers, and in other ways celebrating their "glorious Fourth," the paddle-wheel steamer *Britannia* left Liverpool for Boston amid celebrations which, if not so demonstrative, were not less hearty than those which at the same moment were going forward in the American Athens, or "Hub of the Universe," as it is as often called. The 4th July, curiously enough, thus becomes as memorable an anni-

versary in the history of the Cunard Company as it is in the history of the United States. During that day all the Company's ships, whether in English, American, French, or in whatever other waters they may happen to be, display their bunting in celebration of the practical foundation of the Cunard Company. Patriotic Americans seeing this display have been accustomed to regard it as a tribute solely to the United States, but primarily the day is one of rejoicing to the Cunard Company, although the Company celebrate Independence day at the same time. The double event is a happy, and, we believe, up to this time, an unnoticed coincidence. Let us now go back two years in our reckoning. In 1838, the British Government found itself compelled to recognise the fact that the increasing importance and extent of the trade and travel between Great Britain and North America made it requisite to maintain a speedy and regular mail communication. Liverpool was, as a matter of course, designated as the point of departure on this side, and the then Government, actuated, no doubt, by patriotic motives, selected Halifax, Nova Scotia, as the port of arrival. It was announced that the Government would establish a line of mail-steamers between these two ports; but it was not until after one unsuccessful attempt to obtain proposals for supplying and working the ships for the service, that by an alliance, or co-partnership, between Mr. Samuel Cunard (then of Halifax), Mr. George Burns, and Mr. David MacIver, the scheme was brought into a comprehensive and working shape. The first proposal of Mr. Cunard—who was afterwards created a Baronet for his services—was for a weekly mail service; but, eventually, the first working arrangement was for a bi-monthly conveyance of mails between Liverpool and Halifax, Boston and Quebec. For this service the partners—who immediately became known as the Cunard Company—were entitled to receive from the Government a sum which has been variously stated at £60,000 and £85,000 per annum. The Company, however, bound themselves in heavy penalties for the exact fulfilment of the terms of the contract, which was to last seven years, with reference to punctual and regular delivery of the mails. It was also, understood, if not exactly expressed, that the mail ships were to be constructed so as, in case of necessity, to be made available as troopships, or for the transportation of stores in time of war—a foresight on the part of the Government which was turned to good account during the Crimean war and the Trent affair. Thus it is seen, that this colossal enterprise had comparatively a small beginning. The promoters have had to play at times a very daring game, but by energy, patience, and intelligence, they have won it, and have made the way straight and easy for those who have come after them.

The history of the Cunard Company may be divided into three periods, each of which marks at the same time an epoch in the history of ocean

steam navigation. These may be defined to be : (1.) the wooden paddle-steamer ; (2.) the iron paddle-steamer ; and, (3.) the iron screw-steamer. The first began, as we have already stated, with the *Britannia*, in 1840, and ended with the *Arabia*, in 1864 ; the second began with the *Persia*, in 1856, and ended with the *Scotia*, in 1862 ; and the third is now in flourishing progression, two first-class ocean steamships, the *Scythia* and *Bothnia*, having just been added to the North Atlantic squadron, while, in addition to these, no less than six are now under construction by the Company for their United States and other trades.

Let us now go back for a moment, and glance at the early history and rapid development of the Company's operations. The *Britannia* sailed on her maiden trip from Liverpool in July, 1840, little more than two years subsequent to the memorable voyages of the *Sirius* and the *Great Western*. To this Company, therefore, belongs the proud title of pioneers in the successful navigation of the North Atlantic Ocean by steam. The *Britannia*, it is interesting here to note, was one of four steamers, named respectively, the *Britannia*, the *Acadia*, the *Caledonia*, and the *Columbia*, each of a tonnage between 1,100 and 1,200 tons, and each fitted with engines of 440 horse-power. The character of the first specimens of the Cunard craft may be judged from the fact that the *Britannia* made her first voyage out in fourteen days and eight hours. The good people of the "Hub" went wild with excitement on her arrival in Boston harbour—even wilder than the New Yorkers had gone two years before on the arrival of the little *Sirius* and *Great Western*. The inhabitants fêted Mr. Cunard. In fact, with the shrewd instinct of the commercial importance of the event, so characteristic of the American people, the Bostonians at once comprehended the "situation," and, in doing honour to Mr. Cunard and his brother *entrepreneurs*, they did honour to themselves and their fine city. Some people of the puritanical, old-fashioned type there were, who saw simply a steamship ; others, more far-seeing, discerned the pioneer of great enterprise and fresh potentialities of growing rich and increasing the national prosperity. The *Britannia* never ceased to be most affectionately remembered by the Bostonians, who not long after, by public subscription, cut her out of the ice in the harbour, in order that the departure of the mails might not be delayed. This, at that time, unique event,* was commemorated in a capital plate, one of the copies of which still hangs in the dining-room of the Company's employes at Liverpool.

For seven or eight years following the *Britannia's* appearance, the Company continued its career with almost unbroken prosperity, and,

* The same experience has since been shared by the writer, in the steamer *Canada*, in the winter of 1856-57.

practically, without a competitor. The steamers of the Line continued to sail regularly every week, and, among their other achievements, practically reduced the average duration of the voyage, from port to port, to twelve days. By the year 1848, when the writer first crossed the Atlantic, the *Columbia*, mentioned as one of the original four ships composing the Cunard fleet, had been replaced by the *Hibernia*, and the *Cambria* had been added: in that year the Government wisely increased the subsidy, in order to meet the demand for a fortnightly service, and the Company, to fulfil this fresh contract, put upon the line the *America*, *Canada*, *Europa*, and *Niagara*, and, shortly after, the *Africa* and *Asia*. In each of these steamers the tonnage was increased to more than 2,000 tons, and the horse-power to 800. This period marked an eventful era in the history of the Cunard Company—viz., the competition of the American, or so-called “Collins’” line. The history of the attempt on the part of Mr. E. K. Collins and his coadjutors to compete with Cunard and his cautious, clear-headed Scotch associates, is soon told. It was a short experience, and bitter in proportion as it was short. While it lasted, it was a gallant struggle to contest the palm, and no one can say that it did not have a fair and complete trial—assisted by munificent Government subsidies, and encouraged by the patriotic sympathy of the commercial men of the entire Union. Mr. Collins boldly entered the lists. His first contract was to place his first-class vessels upon the line between New York and Liverpool, the undertaking being to make twenty voyages in each year, and the subsidy amounting to nearly £4,000 a voyage. This contract the Company found itself unable to carry out, as regards the vessels, but it was indulgently treated by the Government—advances were made in order to get the vessels completed, and a fresh arrangement was entered into under which the Company was to make twenty-six voyages, with a subsidy amounting to nearly £7,000 a voyage. The Collins’ Company entered upon this contract with five of the finest, and, with the single exception of the *Great Britain*, the largest steamers of that day—viz., the *Atlantic*, *Pacific*, *Arctic*, *Baltic*, and *Adriatic*. Each of these magnificent vessels was of 3,000 tons burthen, 300 feet long, and was fitted with engines of 300 horse-power. They were all side-wheelers, magnificently equipped for first-class passenger traffic, and capable of steaming up to a speed of fifteen to sixteen knots an hour. But the Company was fated to a short life. It was early overtaken by disaster. Two of its five ships were wrecked: notwithstanding all their efforts, the promoters were thoroughly discouraged, and the Collins’ Company became a thing of the past. The competition of the Collins’ steamers, though so disastrous to the Company, was, on the whole, beneficial to the general interests of the North Atlantic carrying trade, and especially to the Cunard Company. The immense advan-

tages resulting to the general public by honest rivalry, and the great benefits to be derived by throwing open the carrying trade between the two countries, and inviting competition from any and every quarter, were at once manifest. No sooner had the Collins' Company placed the *Adriatic* upon their line, than the Cunard Company ordered to be placed upon the stocks two ships, the *Persia* and the *Arabia*, both of increased tonnage, as compared with any of their former vessels. The *Arabia*, when completed, was sold to the Royal Mail Company, to replace the *Amazon*, which had been lost at sea shortly previous, and the *Persia*, instead of being produced as a wooden ship, came into existence as the first iron paddle-wheel steamer of the Cunard fleet. She was built by Messrs. Napier, of Glasgow, had a tonnage of 3,000, and engines of 900 horse-power. She made her first trip in 1856, and was, beyond question, the finest merchant steamer of her time afloat. This splendid model gave to the Company a period of rest, and it was not until 1862 that the *Scotia*, still one of the crack ships of the line, was produced. The *Scotia*, as well as her commander, Captain C. H. E. Judkins, are among the names "familiar in our mouths as household words." Captain Judkins, who has now retired from active service, is still foremost in Liverpool in all movements calculated to promote the comfort and welfare of the sailor. Among the events of the period preceding the *Persia* and the *Scotia*, must be named the services rendered by the Cunard Company with their steamers in 1854, at the time of the Crimean war; and to dispose at once of the public services of the Company, it is necessary to mention that, in the crisis of the *Trent* affair, when it was of the last importance to the Government that troops should be landed in Canada before the closing of the St. Lawrence, the steamer *Persia*, by an immense exercise of expedition in preparation and of speed in transit, managed, under the able commandship of Captain Judkins, to land a large number of troops at Bic, while another of the Company's steamers, the *Australasian*, was able to land troops at Halifax. From this period, inaugurated by the *Persia* in 1856, the history of the Cunard Company has been one of steady development. In 1864 the fleet began to be augmented by the construction of steamers of large tonnage, upon the screw principle. Five screw steamers were added in that year, several were placed upon the line in the following year, and from that time to the present the progress in construction has been regular and continuous. The latest actual addition to the line has been the *Bothnia*, launched towards the close of 1873. The next will be the *Scythia*, which will take her place in the line in November. She is a splendid vessel, 420 feet in length, and with a breadth of beam of forty-three feet.

In the initiation and early days of the Cunard Line, the service was fortnightly, it was then increased to a weekly service, subsequently it

was made semi-weekly, and latterly tri-weekly. At the present time the Company is under contract to carry Her Majesty's mails in steamers sailing every Saturday for New York, and every Tuesday for Boston. These are, however, often increased; as many as four Cunarders, not unfrequently, leaving Liverpool in a single week.

Since its establishment in 1840 until the year 1860, the Company had built, or bought and owned, 148 steamers, 111 of which were engaged in the trans-Atlantic trade.

But we must leave the past and come down to the more immediate present. The following list, besides giving a comprehensive view of the present *status* of the great Cunard fleet, will enable our readers, by looking at the dates, to judge of the rate at which the several vessels have been added to the fleet since the building of the last paddle-wheel steamer, the *Scotia*, in 1862:—

No. of Vessels.	Names.	Year built.	Tonnage.		Horse Power.	Passenger Capacity.	
			Gross.	Reg.		Cabin.	Steerage
1	<i>Abyssinia</i>	1870	3376	2159	500	102	1068
2	<i>Algeria</i>	1870	3428	2192	500	100	1054
3	<i>Aleppo</i>	1865	2057	1398	280	46	500
4	<i>Bataria</i>	1870	2553	1627	450	150	800
5	<i>Bothnia</i>	1872	3704	2650	518	120	1100
6	<i>Calabria</i>	1866	2902	1730	409	80	900
7	<i>China</i>	1862	2529	1539	550	150	333
8	<i>Cuba</i>	1864	2668	1534	560	140	286
9	<i>Java</i>	1865	2696	1760	600	150	381
10	<i>Palmyra</i>	1866	2044	1389	260	46	500
11	<i>Parthia</i>	1870	3167	2035	450	150	1031
12	<i>Olympus</i>	1860	2415	1585	270	40	900
13	<i>Russia</i>	1867	2960	1709	600	430	...
14	<i>Samaria</i>	1868	2605	1694	300	130	800
15	<i>Scythia</i>	1875	3704	2650	518	120	1100
16	<i>Siberia</i>	1868	2497	1698	300	100	800
17	<i>Tarifa</i>	1865	2058	1399	280	50	589
18	<i>Hecla</i>	1860	2421	1578	270	40	800
19	<i>Scotia</i>	1862	3871	2124	1000	300	

Independent of these, the Cunard Company own six other steamers, viz., the *Demerara* (recently built), *Saragossa*, *Trinidad*, *Nantes*, *Brest*, and *Cherbourg*. These are now engaged in a prosperous trade with the West Indies, and with the above-named steamers of the North Atlantic Service constitute an aggregate effective fleet now in operation of twenty-five steamers.


The aggregate tonnage of the Cunard steamers now working their North Atlantic trade is upwards of 60,000 tons. During 1878,

these steamers made 137 round voyages, or 274 passages, the largest number of any line leaving Liverpool. The number of passengers carried during the same period amounts to 72,611, divided as follows: from Liverpool—cabin, 9,770; steerage, 46,655; total, 56,425. From America—cabin, 8,540; steerage, 7,646; total, 16,186. Thus it will be seen, that of the three hundred and odd thousand emigrants landed in the port of New York during 1873, rather more than one-sixth have been carried by the steamers of the Cunard Company. In 1874 the returns show a slight falling off, owing to the marked decline in emigration to the States. The number of passages granted was 55,200, of which number, 17,001 were cabin. The cargoes landed at New York during the year of 1872, consisting principally of dry goods, machinery, iron, and tin, amounted to 210,000 tons, and their homeward cargoes of grain, provisions, and cotton, to 274,000 tons, showing an aggregate carrying business between New York and Liverpool of nearly half a million tons in a single year. Notwithstanding this enormous and almost unparalleled extent of business, and the caution necessary to ensure the absolute safety which distinguishes the running of the Cunard boats, their reputation for speed has been fully maintained, though the Company wisely abstain from coming into direct competition with any other line in this particular. The fastest passages made have been, eastward from New York, eight days two hours, and from Queenstown, eight days six hours. It is now well known that with the view of diminishing the chances of collision, the steamers of this line take a specified course for all seasons of the year. On the outward passage from Queenstown to New York or Boston, crossing meridian of 50 at 43 lat., or nothing to the north of 43. On the homeward passage, crossing the meridian of 50 at 42 lat., or nothing to the north of 42.

Such continued success and prosperity as the Cunard Line has enjoyed has not, it may be sure, been achieved without the most vigilant supervision and unremitting effort. Their *prestige* and prosperity afloat are largely, if not mainly, the result of their well-directed enterprise, and admirable system ashore. For nearly thirty-five years "Cunard" steamers have steamed down the Mersey bound for New York or Boston, carrying the multiplied wealth and culture, and the manufactured products of the Old world, and returning, scarcely less richly freighted, with the varied raw material of the New. Millions of people, scattered all over the broad acres of the North American continent, still recount to their wondering children, by the family fireside, their experiences on board a "Cunarder" on their first early voyage from England to America; and the decks of each departing steamer, as she swings proudly from her moorings opposite St. George's Pier Head, or the now reconstructed Prince's land-

ing stage at Liverpool, and heads for the broad Atlantic, not less than the Company's books in Water Street and St. Helen's, attest the esteem in which the several ships composing the fleet are still held by our sea-crossing population. Indeed, Cunard, like Rothschild, or Reuter, Baring, or Bass, has become a household word throughout Europe, and by means of the admirably conducted system of branch offices, agencies, and correspondents in every chief city and town of Great Britain, and of the European and American continents, as well as by the satisfactory manner in which Cunard passengers invariably find themselves treated; the Company still retain their reputation, and continue to be appreciated throughout the whole commercial world.

LAW OF MARINE INSURANCE.

N the 12th March a discussion on this subject arose in the House of Commons. The proposal of Mr. Brassey was in substance that insurance should be nothing more than an indemnity for loss; the amendment was that an owner should only be allowed to insure for, say, two-thirds of the value.

Mr. T. BRASSEY, in rising to call attention to the evidence relating to Marine Insurance taken by the Royal Commission on Unseaworthy Ships, said that it did not require a legal training to perceive the evils of the present state of the law. If it could be shown that the abuses of marine insurance had a tendency to encourage carelessness in the management of shipping, and that there was a general concurrence of opinion among competent persons as to the necessity of a revision of the law, he should be justified in moving for the appointment of a Royal Commission. He could at all events show that the facility for insuring at the full, and sometimes at an exaggerated, value, was a primary cause of carelessness and recklessness, and of the consequent deplorable loss of life at sea. The care of a ship divided itself, as Mr. Harper, the Secretary to the Salvage Association, most truly said, "into a hundred particulars." Was it not certain that this care was likely to be relaxed in the case of an owner who knew that if his ship went to the bottom he not only got the money invested in his ship, but a large profit besides into his pocket? The extent to which marine insurance had been allowed to exceed that mere indemnity for loss which alone it was originally intended to secure could best be realized by a striking illustration, elicited by Mr. Cohen to the Royal Commission. The ship *Sir William Eyre*, valued at £8,000, sailed from Glasgow to Otago in 1863. She was damaged on the outward

voyage, and temporary repairs were effected at Otago at the cost of the underwriters on the outward freight. The ship proceeded to Calcutta, where she was again surveyed and found to be not worth repairing. She was lost shortly afterwards in the cyclone of October, 1864. The damage which the vessel was found at Calcutta to have sustained having been caused by her being stranded before she reached Otago, the underwriters on the policy to Otago were held liable to pay £6,000. The shipowner had insured in the sum of £4,000 the chartered freight homewards from Calcutta; and as the ship had become a constructive total loss, the House of Lords held that the underwriters were bound to pay the £4,000. Finally, the shipowner, before he knew that his vessel had been seriously injured, had insured her in the sum of £8,000 by a time policy for three months after her arrival at Calcutta, and, although the ship, when insured, was a total loss, he recovered his insurance. The total sum thus recovered amounted to £18,000 on a ship valued at only £8,000 by the owners themselves. That was, no doubt, an extreme case; but other cases in which shipowners had recovered from the underwriters sums far exceeding a fair indemnity for their loss were of constant occurrence. He would now advert to the open policy, or that in which the value was not fixed, either for ship, freight or goods. To show how this worked in practice, he would take a case put before the Commission by Mr. Farrer. A steamer of 1,200 tons bound for Calcutta and back through the Suez Canal, with a chartered freight on the outward and homeward voyage of £12,000, was insured in an open policy at the full value. Suppose the ship to be lost on the outward voyage, in the Bay of Biscay, the shipowner was entitled to recover the gross freight of £12,000, although by the loss of his ship at the commencement of her voyage he had avoided paying for Suez Canal dues both ways, £1,200, for coals at Calcutta £1,600, as well as the expenses for provisions at Calcutta, wages to the crew, and port charges at Calcutta and London. The total saving by the loss of the vessel at the commencement of the voyage would thus amount to £4,500. Under the voyage policy the ship required to be seaworthy at the commencement of the voyage; but, having once set forth, no subsequent unseaworthiness voided the policy; and thus neither shipowner or shipmaster had a continued interest in keeping the ship in a seaworthy condition. A time policy, again, allowed a shipowner to recover his insurance, even though the vessel which was under his control were unseaworthy, while the innocent proprietors of goods, being obliged to insure under a voyage policy, forfeited their claim on the underwriters in the case of the unseaworthiness of the vessel being proved. If they could compel every shipowner to be to a certain extent his own insurer, or, if they could prevent excessive valuation, all other legislation with a view to the safety of life at sea would

become superfluous. The aim of future legislation must therefore be to confine marine insurance to a simple contract of indemnity. Thus limited, it might justly be regarded, to use the language of Jeremy Bentham, as "one of the most beneficial inventions of civilized society."—[*Note.*—In this speech there is nothing to show that an underwriter does not enter into the risk with his eyes wide open. And no reason is shown why he should not be kept to his bargain afterwards. It is always understood that fraud can now be punished.—ED.]

Sir J. LUBBOCK : It would be a great mistake to look upon this as essentially an underwriters' question. The underwriter covered himself by increase of premium, the shipowner covered himself by raising freights, and the real loss fell upon the consumer, who had to pay more for the goods he required. In the present state of the law it was actually in some cases better for the shipowner, in a pecuniary point of view, that his ship should be lost. Surely such a state of things was entirely contrary to public policy and the true principles of insurance. Insurance ought to be a contract of indemnity. The present state of the law was most inconsistent. A person could not over-insure against fire, and it was contrary to law to insure a life in which the insurer had no pecuniary interest. The compensation awarded to sufferers by railway accidents had a tendency to render the companies more careful. Supposing, however, that a railway company could actually make a profit out of a bad accident, would the public stand a state of the law which would be most injurious to the public interest, would add one more to the terrors of railway travelling, and would certainly not conduce to the safety of passengers? Yet, while it was a misdemeanour to send a ship to sea in an unseaworthy condition, the law actually allowed a man to make money by doing so, so that if detected he went to prison with the profit in his pocket. There seemed to be three points which specially required attention—namely, over-insurance, insurance of gross freight, and the law as regarded seaworthiness on time policies—that is, when a ship is insured for, say, six months or a year. As regarded the first, Mr. Harper called the attention of the Commission to a case in which a shipowner had insured his vessel for £36,000. She was abandoned by her crew, but subsequently picked up and brought into port. It was found that it would take £16,000 to repair her thoroughly. On this the shipowner claimed for a constructive total loss, swearing that the ship, though insured for £36,000, was really only worth £15,000. He proved, in fact, that this was the case, and the underwriters actually had to pay £36,000 on the express ground that the vessel was really only worth £15,000. In the case of "*Barker r. Janson*" a vessel was insured for £8,000, she being at that time, though unknown to the owners, a mere wreck, and, in fact, value-

less. Yet the Court held that, under the existing state of the law, the insurers were bound to pay. Mr. Stephenson, then Secretary to Lloyd's, truly pointed out that if a vessel worth £20,000 is insured for £30,000, the shipowner virtually bets £10,000 that she will go to the bottom. Again, in the case of freight, the insurance of freight was surely very objectionable. Last year, for instance, a vessel sailed from Quebec for Liverpool. The freight, as per charter party, amounted to £3,500, but was insured and valued for £6,000. The ship was lost in the river St. Lawrence. Now, if she had completed her voyage prosperously the master would have earned £3,500, less at least £1,000 for wages, &c., so that his net receipt would have been £2,500, while because the voyage was not successful, because the ship was wrecked, he got £6,000. Another remarkable anomaly in the present state of the law was that while the question of seaworthiness could be raised in the case of a policy on goods, or on a ship if insured for a voyage, it could not be opened on an insurance for time. Chief Justice Cockburn, in the case of "*Byrne v. Schiller*," said our marine insurance law was founded on principles which were erroneous and directly opposite to those on which the laws of America and of every country in Europe but England was founded. Mr. Cohen, one of our highest legal authorities, and Mr. Justice Keating entertained the same view. Of course he did not deny that in some respects the present state of the law had its advantages. For instance, it was convenient to settle the value beforehand in the case of freights; but if the insurance were to be on the real value, he believed there would be no practical difficulty in arriving at the amount, and it must be remembered that the Admiralty Court constantly had to do so in cases where one ship had been run down by another. It was alleged that such a change would increase litigation, but both Mr. Hollams and Mr. Walton, the two solicitors selected by the Commission to give evidence on that part of the subject, believed that, on the contrary, it would actually have a tendency to diminish lawsuits.—[*Note*.—Here again there is nothing to show that the underwriter did not enter into a contract with his eyes open. He received his premiums, and the Court held that he must pay the sum agreed on as value. Why *do* underwriters enter in these contracts, and should they now be furnished with encouragement and facility to evade responsibilities which they have deliberately received money for incurring?—ED.]

Mr. J. BARCLAY said: The value of the vessel should be determined before the insurance was effected, and that could be done by calling in the services of the local Marine Boards. Nor was there much weight in the objection that vessels could not be valued with sufficient accuracy, because every day there were valuations of ships upon which money passed from hand to hand. If, instead of trusting to surveys of the Board

of Trade to save their consciences for any neglect of duty on their own part, and instead of trusting to insurances to protect them from loss, shipowners would exercise care and vigilance in the selection of their officers and crews: they would see that their vessels were not overloaded or despatched in an unseaworthy state. In this way a greater reform would be effected in our Mercantile Marine than would be possible by any legislation.—[*Note*.—This is a very important speech. It shows that value of a ship can be ascertained before she is insured. If, as Mr. Barclay says, the value can be ascertained, and if, in order to do plenty of business, an underwriter does not take any pains, or make any inquiry in the matter before insuring, the conclusion is, not that he should be relieved from paying, in the event of subsequent loss, but that he, with the owner, should be prosecuted if the unseaworthy ship is between them insured and sent to sea as a good ship. Their combination has deceived all other parties.—ED.]

LORD ESLINGTON said: The first suggestion he would offer to the House was the necessity of caution. The Royal Commissioners themselves had proceeded with very great caution. He had come to the conclusion that over-valuation was the small exception to the general rule. The reckless and improvident shipowner undoubtedly gained from over-valuation by the loss of the ship, but the prudent shipowner gained in the lower premium he had to pay by under-valuation. He entirely agreed in the opinion expressed by the late Mr. Justice Willes that any change in the law would be abortive unless underwriters were seriously disposed to aid in giving it effect. If serious obstacles were imposed on insurance the business would inevitably be driven out of the country into the hands of foreigners.—[*Note*.—Here is the testimony of one of the Royal Commissioners, that over-valuation is the *small* exception to the general rule.—ED.]

MR. A. PEEL said it was possible for underwriters and insurers to evade any legislation unless it met with their approval, and unless Parliament gained the assent of the underwriters to legislation, it was liable to become waste legislation. The motion asked the House to assume the principle of indemnity for loss, and the mover of the amendment suggested insurance for two-thirds of the value; but that only shifted the difficulty, for the same conditions applied to the two-thirds as to the full value. Indemnity might be an excellent principle to arrive at, but, judging from the Report of the Royal Commission, we were not yet in a position to say that indemnity and nothing more nor less should be the principle of our legislation. Then a difficulty arose as to what over-valuation was; for what was over-valuation to one man was not over-valuation to another. The man who had embarked his whole on one vessel was entitled to say she was worth more to him than was a vessel of the same intrinsic value to a firm who had a line of vessels

employed in an established trade ; because the loss of one of those vessels would be a far less serious matter to the firm than would the loss of one vessel to the single owner, who would suffer incalculable injury as compared with his more wealthy rivals. Therefore, such a man was entitled to say that the vessel was worth to him more than the market price, and that, if he could effect an over-valuation on that account, he did not see why anybody should interfere with him, so long as he paid the premium. It must not be supposed he was arguing that any amount of over-valuation should be allowed as between insurer and insured. Under the French law, while valuation was allowed, valuation was presumptive evidence of the value of a ship, which was liable to be rebutted by extrinsic evidence. So, under our law, everything might be vitiated by fraud. He would give the underwriter, if he supposed an excessive value was put on a ship, the opportunity to try the question in a court of law. Following the lead of the Royal Commission, he had sketched out clauses which he thought might be considered, providing “ (1) That whether in a time policy or in a voyage policy, there shall be an implied warranty, on the part of the shipowners, that the ship be and continue seaworthy ; and (2) that in the case of any valued policy, it shall be competent to the underwriter to plead that the sum claimed is in excess of the loss suffered, and that in open policies there shall be deducted from the value of freight claimed to be earned at the due termination of the voyage such expenses as by reason of the loss of the ship have not been incurred.”—[*Note*.—This raises the real question—viz., “ What is value ? ” It can be answered with no more ease than Pilate’s celebrated question, “ What is truth ? ”—*Ed.*]

Mr. MACIVER said : The general scope of the conclusions arrived at by the hon. member for Derby was also perfectly true. As to the question of insurance, if disasters were only made unprofitable, they would practically cease. As an underwriter, as well as a merchant, however, he could say that in his part of the country, over-insurance was exceedingly rare.—[*Note*.—Of course Mr. MacIver will admit that insurance has nothing to do with the loss of passenger steamers. Take the cases of the *Atlantic*, *City of Boston*, *Columbia*, *Orion*, *Zebra*, *Tarifa*, &c., &c.—*Ed.*]

Sir C. ADDERLEY : The question of marine insurance was at the very foundation of the object he had in hand in presenting to the House the Bill which he lately introduced—namely, the increased safety of the merchant service and the preventing of reckless adventures in commerce at sea. All were agreed that the state of the law of marine insurance was now unsatisfactory. That law was in absolute antagonism with its own avowed principle—viz., the principle of indemnity for loss. At this moment the practice of the law made it in many instances a gain to the

shipowner to lose his ship, and he maintained that over-insurance differed only in name from a wagering policy—the very thing which, by an Act of George III., was made illegal. It could not be wise to allow a law of that great importance to be in practical conflict with its own avowed principle. But not only did some shipowners gain more by the loss of their vessels than by safe voyages, but some gained much less than they ought to do on the principle of indemnity for their actual losses; for there were cases in which the underwriter was actually discharged from his liability through some mere latent defect of the ship of which the shipowner knew nothing, and for which he was not responsible. Against a revision of the law it had been argued, in the first place, that it was dangerous to disturb the commercial usages of a country like this. But the marine laws of the country must be perpetually changing, more or less; and the proposal for a revision pointed merely to a restoration of the principle of the law. Another objection was that the inherent value of a ship might not be the virtual value to its owner. It was perfectly true that its value might be greater to one man than to another, or greater at one time than at another, but no principle of law could meet such accidental cases. There must be some definite and fixed principle. There could be no insurance of fancy value, no insurance of prospective advantages or of an indefinite proprietary stake. If there was to be a clear, distinct law of insurance, there must be a definite estimate of value. It had been argued, further, that Parliament had nothing to do with the matter—that it was a question between the underwriters and the shipowners. But surely the fact that the public safety was concerned gave Parliament a right to interfere. As long as a total loss must be more lucrative than a partial loss, it was not in human nature for the shipowner to take as much care in the selection of master and crew and in attending to the general condition of his ship as he would do if he felt that he had a risk. In the interest of the public safety, Parliament had not only a right, but was under a duty to interfere. It was not to be expected, considering the keen competition that existed between insurance offices, that the underwriters would take it upon themselves to alter the law, and there was a diversity of interest among the shipowners also, which made it unlikely that the needed reform would be carried out by them. What he wanted was to ascertain the experience of other maritime countries as to the different systems prevailing in them; and with this object he had ventured, in conjunction with the noble lord at the head of the Foreign Office, to draw up a list of questions which would serve to elicit the desired information. These questions had been forwarded to the various foreign Governments some weeks ago, and he would place them forthwith on the table of the House. He hoped the House would agree with him in thinking that the object in

view would be better attained by leaving the matter in the hands of the Government than by appointing another Royal Commission.—[*Note.*—Most calm and quiet people will think that it is very much better left there, to be dealt with, let us hope, deliberately in the course of a few years, when the present excitement has passed over.—ED.]

Mr. E. SMITH asserted that a very large proportion of the insurance of this country was at this moment done with foreign insurance companies. He was inclined to think that there ought to be some limitation placed upon the amount the shipowner should receive in the event of the loss of his ship, which would prevent him receiving more than the actual amount of damage he had sustained. The value of a ship, however, was constantly fluctuating, being in a large degree dependent upon the cost of iron at the time of her loss. Care must, therefore, be taken that in regulating the insurance of vessels a premium was not offered upon cheap and bad ships to the discouragement of good and honestly built vessels.

Mr. PLIMSOLL deprecated the system of underwriting for small sums under which the underwriters had not sufficient interest to induce them to make inquiries before they insured, or to induce them to prosecute in the event of manifest fraud having been committed.

Mr. MACGREGOR pointed out the necessity for some interference by the Legislature on the subject of the insurance of vessels with a view to the protection of the lives of our seamen. For his own part, he had had great trouble with the small underwriters, but never any with the large companies which had insured his ships. The proper time for ascertaining the value of the ships was when the insurance was effected, not after they had been lost.—[*Note.*—This observation of Mr. Macgregor's is well worth recording. It, like Mr. Barclay's, shows that the value of a ship can be ascertained when the insurance is effected. If it *can* be, then ordinary mortals would ask why *is it not* ascertained, and all talk about over-value stopped. It is to be hoped that marine insurance may be limited to indemnity for actual loss: not necessarily, however, to the immediate and direct loss. The subject is full of difficulties. It is to be remarked on the whole question that the way to prevent unseaworthy ships from being insured is not to let the underwriter first pocket the premiums, and then evade payment when the ship is lost, and to wait for proof of value until the ship is at the bottom of the sea; but would appear rather to be to hold the underwriter responsible if he give undue facility for insuring unsafe hulls, and to make him pay the sum assured into court. We pay very little regard to the clamour for opening policies on mere subsequent questions of value of a ship, because an underwriter ought to make it his business to know the value of a ship just as much as that of a house or warehouse, and he ought also to know the legitimate risk of the trade.

In case of goods there may be reason for opening the question of value ; but, even then, is the value to be what is paid for them in England or what they would fetch, say, in India, and is nothing to be allowed for loss of business and for interest on the capital. And again the sinner is said to be the owner of the ship, and not the owner of the goods. Another very serious general point is, that if values which may be agreed upon at starting, are simply to be opened whenever the underwriter finds he has made a contract that does not afterwards suit his book, the whole system of trade will be interfered with. If the basis of "indemnity" be established by law, and if the underwriter be held responsible for not knowing what he is insuring, there will be but little chance of subsequent dispute, and probably not one underwriter in one thousand will dare to re-open a policy on a question of value or of seaworthiness, for by so doing he would get the name of first taking money for a risk and then repudiating his bargain. The mere requiring that as between the underwriter and the shipowner the ship shall be seaworthy, means but little as regards safety of life, unless the words are added to show that "seaworthiness" is to mean, in underwriters' language, "seaworthiness at ordinary premiums;" because a risk that will not be taken at one rate is deemed by an underwriter to be satisfactory, *i.e.*, seaworthy, at double or treble rates. The matter, may, however, be regarded in a very different light by the crew.—*Ed.*]

OUR COLONIES.—VIII.

THE ANIMAL FIBRES THEY SUPPLY US.

THE animal substance most in importance as a material for textile products is wool, and for the main supply of this fibre we are now dependent on our Colonies. The woollen manufacture is the second great textile industry of the kingdom. Although of late years outstripped by cotton, it was in earlier days our most important manufacture. There are in the kingdom about 2,500 factories engaged on wool with 7,000,000 spindles and 123,000 power looms, and there are more than a quarter of a million operatives engaged in the factories, while the total number of persons directly and indirectly dependent on the trade may be set down at fully one million, there being a larger number of dependent workers in auxiliary trades than in connection with any other British manufacture.

The sheep gives immediate employment to thousands who in their several spheres utilise different parts of it for the various uses of the great human family. In these we have the producer or sheep farmer, the butcher, the skinner, the tanner, shoemaker, tallow chandler, &c. Then the fleece, which we call wool, gives employment to the ship-owner, the wool brokers, spinners, manufacturers, clothiers, &c., and the various branches of trade to which these give rise.

The great increase of combing machinery, and the high class style of articles produced, are impressing the present generation with a "lustrous" taste, and the future efforts of stockowners will be taxed to maintain a supply of this wool equal to the demand. Already our distant Colonies are echoing the call for long bright wool, by sending to our shores within the past ten years a large proportion of their clips. The finest types of our sheep have been exported; and a cross with the fine-woolled sheep of Australia and South America produces a style of wool which for quality and lustre goes far to eclipse our most famed home-grown. The effort of the colonists lies in securing a valuable fleece, the carcass being a secondary object, while the British farmer has to work at the double purpose of securing the heaviest carcasses with the finest fleece.

The value of our exports of woollen manufactures has been slightly on the decrease of late years; it was, however, returned at £22,795,000 for 1874, which is more than one-tenth of the whole British exports. While we know the quantity and value of the manufactured woollen goods exported, we have no accurate guide to the precise amount of woollens consumed at home. This our most experienced merchants, however, estimate to be three-fourths of the whole manufacture. But even if we allowed only £1 a head a year for woollen goods to each soul of the population, this would make a sum of over £32,000,000, so that the total value of the woollen manufacture must exceed £55,000,000.

At the risk of being wearisome to the reader by statistical data, we may point out the immense benefits which the woollen manufacturer has derived from the extension and establishment of British Colonies. In 1816, the amount of Foreign wool received was 71,487,313 lbs., and from British Possessions but 29,563 lbs. In 1836, the Foreign was 57,817,430 lbs., and from British Possessions, 6,422,484 lbs. The wool imported in 1843 was from British Colonies, 21,078,362 lbs., and in 1873, 249,550,483 lbs. From foreign countries in 1843, 28,164,731 lbs., and in 1873, 63,946,259 lbs.

Within 150 years, implements which retained the closest resemblance to those used by the earliest nations of the world, the people of Central and Western Asia, have been displaced by the prodigious power of steam, the mule spindle and the power-loom—and yet population during the displacement has gone on with a geometric ratio of increase, and

there appears no limit to the progress, either of population or of manufacturing art, but the limit of the earth's surface to supply food. The bearing of the great increase of the wool manufacture on the past progress and future prospects of Australia is most important. Sixty years ago the export of wool from Australia was under 14,000 lbs. In 1821 it reached 175,483 lbs. The decennial progress since is shown in the following figures :—

1831	2,541,205 lbs.
1841	12,899,392 lbs.
1851	41,810,117 lbs.
1861	74,000,000 lbs.
1871	182,753,585 lbs.

This, moreover, does not represent the whole of the production, some being now worked up in the Colonies, and some shipped to other quarters than the United Kingdom. The total export of wool from Australia and New Zealand in 1871, was returned at 224,792,715 lbs. So greatly dependent upon the Australian Colonies is England for the supply of this staple, that it is not too much to assert that a sudden suppression, if such a thing were possible, would be productive of results as disastrous as those which arose out of the civil war in America and created what is now generally known as the cotton famine.

The progress of every Colony recorded in commercial history sinks into insignificance when compared with the rapid spread of our Australian Settlements. A pastoral empire has been founded in that Continent which promises soon to become the most extensive ever known.

There is scarcely an assignable limit to the multiplication of sheep, horned cattle, and horses, which will ultimately spread over the whole interior of Australia, and in a brief period meat, tallow, and hides will be an export of immense magnitude from the Australian Colonies.

About two-thirds of the whole quantity of wool imported into the United Kingdom for all the various purposes of woollen manufacture is now received direct from our Australian settlements. The Red Indian hunting in the farthest prairies of North America or skimming the surfaces of its lakes in his canoe, wears his English blanket, the fleece of which has been grown in Australia.

The progress of acclimatisation has modified the original type of the Spanish merino. There has been a very decided gain in the softness of the wool and an improvement in its elasticity, but there has been a diminution in its felting quality, which can scarcely be considered a loss. The wool has also increased in length but diminished in density, so that the weight of the fleece remains about the same. The weight of the fleece all round may be considered as averaging $2\frac{1}{2}$ lbs. per sheep, but the

best sheep yield about three pounds of clean spout-washed wool, which is equal to six pounds of greasy wool. The tendency of wool, so long as it is sound, is to increase in length and stoutness of fibre in hot climates, while it loses in density and fineness. To have anything like the same weight of wool per sheep, the fleece in the case of the clothing sheep must be comparatively high in density, and density is far harder to maintain in a hot climate than length.

The importance of the Australian wools cannot be estimated alone by the quantity imported, but the quality is so fine that only Saxony and the finest clips of the Continent could supply their place, British wool being generally wholly unsuitable for the purposes to which these are applied. For many years the Australian wools have driven fine Continental wools out of the British market, and these wools are now principally absorbed in native manufactures in Europe.

By the latest statistical returns there are upwards of 52½ million sheep in the Australian Colonies, and owing to the wide extent of pasturage available they go on increasing year by year. Hence there are more sheep in Australia than in any country in Europe. In the United Kingdom there are under 33,000,000; in Russia, 45,000,000; in the United States, 41,000,000; and in France, 31,000,000. The open, grassy, and pastoral character of this boundless territory, the mildness and salubrity of the climate, and the slight obstruction offered by the handful of her original population, are all circumstances that favour the present rapid development of her resources.

New Zealand possesses nearly 10,000,000 sheep, and the exports of wool from thence in 1871 were valued at over £1,606,000. The *pro rata* value of wool shipped from the three principal producing Colonies in 1871 was as follows, per head of the population:—

			Total value.		Rate.
New South Wales	...	...	4,748,150	...	£9 2 11
Victoria	...	...	4,287,011	...	5 17 6
New Zealand	...	...	1,606,144	...	6 0 8

In the eighteen years between 1853 and 1871 the value of wool exported from New Zealand increased twenty-four fold, and the quantity thirty-five fold; the average value in 1853 having been estimated at nearly 1s. 8d. per lb.

The Cape Colonies, like those of Australia, have proved the truth of old Fitzherbert's remark that "sheepe is the most profytablest cattell a man can have."

There are in the South African Colonies upwards of 11,000,000 sheep, and we now receive from thence upwards of 42½ million pounds of wool, besides what is sent direct to Europe. But the Dutch States, which are

offshoots from our African Colonies, also possess over one million head of fine-woolled sheep, and ship their product through our Colonial ports. Facts like these, to say nothing of the other exports of the Colonies, cannot fail to give British South Africa importance in the eyes of the public here, and may well inspire confidence as to the future of the country.

Previous to the year 1833, the only sheep, with few exceptions, to be found in the Cape Colony were the broad-tailed sheep bearing no wool. But in that year a few merinos, brought over from Australia by a trading vessel, were found much superior to the fat tails, and admirably suited to the country. The wool exported from the Cape Colony in 1833 was but 113,000 lbs. Forty years have brought the shipments from South Africa up to $54\frac{1}{2}$ million pounds. Flocks of the purest woolled sheep, Cheviot, merino, and other breeds, are now to be generally found in the grazing districts of the Cape Colony, Natal, and the Dutch States, and there is quite a rivalry with the farmers who shall have the best stock of rams.

Large as our imports of wool are, Continental buyers compete in our markets; already our manufacturers are beginning to complain of insufficient supplies and high prices, and hence resort, as an expedient, to torn-up woollen rags or shoddy. Where, then, but to our Colonies are we to look for increased supplies of wool. All the British Possessions have made immense strides in their production of wool. Australia and New Zealand, our South African Settlements, British India, and Canada have largely increased their number of sheep and the aggregate yield of wool.

In 1841, the exports from our African Colonies were:—1,079,910 lbs. of wool; in 1851, 5,816,591 lbs.; in 1861, 25,520,948 lbs.; in 1871, 52,373,652 lbs. In 1872, the total wool exports from South Africa had increased to 54,495,727 lbs.

Let us now pass to British India. We received no wool from India till 1833, when the importation was but 3,721 lbs.; in 1841 we received about 3,000,000 lbs.; in 1851, 4,549,520 lbs.; in 1861, India shipped 21,385,429 lbs; and in 1872, 24,250,000 lbs.

We do not receive much wool from British America, as a great deal is worked up locally, but still Canada has increased her exports of wool from 1,545,412 lbs. in 1858, to 3,191,834 lbs. in 1872. Finally, it may be stated that the present quantity of sheep's wool which the British Possessions export, makes about 300,000,000 lbs.

So much for sheep's wool, but there are other animal products which our Colonies can aid us with.

There are two other animal fibres in great request by our woollen manufacturers for which we are at present almost entirely dependent on foreign countries—mohair, or goats' hair, and alpaca. But there is no reason

whatever, looking at our vast territories and the boundless pasturages in British Possessions, why we should not ultimately produce these also in sufficient quantities for our own demands. Already the enterprise has been successfully entered upon, and promises ultimate success. The animals which produce these fibres were long jealously guarded, and obstacles thrown in the way of their export, but these have been overcome, and the animals thoroughly acclimatised in our Colonies.

In South Africa these goats are found to thrive well. The immense dry and apparently barren tracts of land are capable of affording food to endless herds of these animals, and the staple is now in a fair way of becoming an important item of exportation from the Cape Colony. The softness, flexibility, and durability of Angora wool, the brightness of its colour when dyed, its long staple and fibre, are well known. The hair of this goat, we are told, furnished the hangings of the Jewish tabernacle, and was also woven into cloth by the ancient Persians. These garments were dyed in brilliant colours indigenous to the country, and robes of such extreme beauty and splendour made from them, that they were worn by the kings of Persia.

In South Australia, New South Wales, and other parts, the Angora goat has also been introduced, and thrives well, the Australian soil and climate being strikingly similar to those of its native country. Should it be the fortune of Australian breeders by care and attention to effect improvements by which the imported animals can be increased in size, weight, and quality of the fleece, the advantages conferred on the Colonies will be numerous and lasting. The demand for mohair is increasing in Great Britain and on the Continent, and will become larger and more steady every year, and may be expected to operate favourably upon prices in every available field of supply.

Parts of New Zealand and Tasmania would seem to be well fitted for this animal. When we remember what has been done with the fine merino breed in Australia, similar success and profit might result from greater attention being given to the Angora, Cashmere, and Thibet goats as well as the alpaca. In Victoria there is a flock of Angora goats 108 in number, besides a few young kids. From calculations carefully made, which have been verified by Professor Strong, of the Melbourne University, this small flock, if carefully managed, and sufficient pasture allowed to it to graze upon, will, at the ordinary rate of increase, reach in thirty years the very large number of 442,368. This number should be sufficient to displace most if not all the common goats in the Colony. In forty years, at the same rate, the pure flock would increase to over seven millions. By calculating the rate of increase at 80 per cent. yearly on the number of does of an age to produce kids, and making the proper allowance for deaths from age and other causes, the result would be still

greater, and the above calculation would seem moderate in comparison. As a matter of fact, the flock has actually been doubled in number by natural increase in the first two years, and with sufficient pastures and proper care and management, would doubtless reach the large number of 442,368 in the year 1903, and upwards of seven millions in the year 1913, or forty years hence. The value of the clip at present prices, and estimating each fleece at 4 lbs., would reach the large sum of £309,657 in 1905, and in 1915 the enormous amount of £4,954,521, or nearly five millions sterling.

The demand for mohair or goats' wool, which was at first limited by the supply, has gone on rapidly increasing. Twenty years ago we could only obtain 3,000,000 lbs., last year we received more than 8,000,000 lbs., and paid for this quantity one million sterling. How beneficial would it be if this sum were paid to our brethren in the Colonies instead of to foreigners. Even the French are grumbling at having to purchase a large quantity of mohair yarn of us, and are trying to introduce the animal into Algeria, to produce the goats' hair for themselves.

Alpaca wool is another important animal fibre, which we shall probably obtain some day in quantity from Australia. After considerable outlay and great difficulties and peril, despite the precautions of the Peruvians, English enterprise carried off a large flock of these animals, and landed them safely in New South Wales. It took Mr. Ledger six years of indomitable perseverance and ability to accomplish the feat of transporting and shipping a flock of 322. In the course of his wanderings through Peru, Bolivia, and the Argentine Republic, in the prosecution of his hazardous expedition, he passed over 7,000 leagues on muleback, through wildernesses only diversified by impracticable roads, mountain pastures, swamps, plains, and woods. He succeeded in landing, in 1861, at Sydney 280 animals in good health and condition.

The use of alpaca wool is considerably extending among manufacturers, who produce beautiful stuffs in great varieties from it, worked alone or mixed with wool or silk. It occupies a place which no other staple will supply, and is capable of unlimited uses. At present we are entirely restricted to Peru for our supply, which progresses very slightly. The average imports in the three years ending 1871 was a little over 3,500,000 lbs., and in the three years ending 1874, 4,250,000 lbs.

The alpaca is hardy, and can feed on the refuse herbage left by other animals. Hundreds of thousands of alpacas might roam among the mountain chains of Australia, or even its elevated plains, neither trenching upon the sheep nor depasturing upon cultivated lands. They would not enhance the price of a wheaten loaf, but would open up employment to thousands, call a large and ever-increasing capital into circulation, and not only produce a new and valuable fabric, but also, by degrees, create

a demand within Australia itself for the employment of machinery for the production of the multitudinous manufactures to which the alpaca silky wool can be applied.

The colour of the wool varies ; nine-tenths of it is black, the rest of it brown or grizzled. The staple is of extraordinary length, of a singularly soft and silky quality, and, when carefully managed, loses nothing of its gloss in dyeing and finishing. If by the extended introduction and propagation of this animal in our Australian Possessions, we can add to the supply of this long valuable wool, we shall benefit materially both the colonists and our manufacturers.

There is yet another animal fibre of great value, of which we get a small proportion only from our own Possessions, and the great bulk from foreign countries, and that is Silk. We require larger quantities of raw silk to keep our looms going, and of the 6,000,000 or 7,000,000 lbs. imported, the bulk comes from China, Japan, and Europe. Our returns do not show very explicitly what we get from India, as it comes through Egypt, Marseilles, &c., but the quantity sent away from India, exclusive of that worked up there, ranges from 2,000,000 to 2,500,000 lbs.

The demands for silk for the civilized world are such that Bengal silk is more and more inquired for, and has materially improved. Much, however, yet remains to be done, both as to quantity and quality. The silk of Bengal was originally inferior in quality, and very carelessly wound ; but now skilful cultivators, seconded by large capital, have originated, for some years past, improved establishments for reeling the silk from the cocoons. Now, on all sides, plantations worked by Europeans are starting up, and the natives, instead of winding off the cocoons which they produce, sell them to the proprietors of the plantations, and these being reeled upon the Italian system, silk is turned out fit to compete, in many respects, with that of European production.

In 1851, the quantity of silk exported from India was 592 bales, valued at £619,818. Nearly all this was sent to England, and a little to France and the Arabian and Persian Gulf ports. In 1861, the total quantity exported was 873 bales, of the value of rather more than £1,000,000 sterling. In 1871, the quantity was 2,280,159 lbs., valued at £1,351,846. While the exports of Bengal silk have remained almost stationary, the price has nearly doubled. The rise is, undoubtedly, to a great extent, due to the introduction of European improvements in the system of reeling.

The production of raw silk is an important branch of industry open for future skill and exertion in many other parts of India, and the duty of the British Government is to go on encouraging it by every possible means, as they are doing in France. The native Indian cocoon is a poor small thing, and it takes, at least, 10,000 of the best to produce a

pound of silk ; while in France, their cocoons are so much larger, that about 2,500 will produce the same quantity. But we are not limited to British India for the production of silk ; in our own territories strenuous efforts are being made, and with good effect, to produce silk in a number of our Colonies.

Among the most noticeable of these are the Mauritius, the Cape Colony, and Natal, almost all the Australian Colonies and New Zealand. Not only should the mulberry-feeding silkworm be introduced, but the castor-oil and oak silkmoths and others of the East might be tried with advantage to supplement the supply of this expensive and much-sought-for staple of commerce. Forty-eight thousand persons are employed in the manufacture, setting in motion two million spindles and thirteen thousand power-looms, and a larger and cheaper supply would increase this activity and promote extended consumption.

Horse-hair is another animal fibre which is not plentiful and maintains a high price. We have thirty-seven or thirty-eight factories employed working up the material, employing about 2,400 operatives ; and as yet we derive but a small supply of the hair of the manes and tails of horses from our Colonies—Europe and South America being the chief sources of supply.

A survey and examination of the hides and skins, the bones and tallow which our Colonies supply us, would further bring up the indebtedness we owe to them for animal products. But we have other more important commodities to deal with as Colonial products, and must, therefore, pass these over.

FREEBOARD AND REGISTER TONNAGE.

IN all proposals for regulating freeboard which have appeared of late there is one characteristic in common, a choice of register tonnage as the basis on which to estimate a percentage of volume to be considered as spare or reserve buoyancy. One plan, as we have described in former articles upon the subject of freeboard, had for its object the cutting off a definite percentage for each kind of ship and the marking a "line of reference ;" that is, what would be expected to indicate the usual freeboard, another proposal was to mark a *datum* patch whose upper and lower edges should indicate respectively two fractions of the total volume of the ship. The whole subject having again come under discussion in connection with the Government proposal for marking a scale of feet on

every ship's side, so that her freeboard may be read off by anyone, we intend in this article not to re-iterate our well known views upon the whole subject, but in the first place to notice what is new in recent developments of the question, and, secondly, to point out what we believe would be the best means of using the register tonnage as a means of determining the points where certain percentages of volume are cut off.

When it was first proposed that freeboard should be regulated upon considerations of volume rather than of depth of hold, it was seen that to measure the actual displacement of every ship would be a most expensive process, and would require a very large addition of skilled draughtsmen to the Board of Trade staff. At the same time it was equally apparent that it would be highly objectionable to regulate the freeboard by a scale of displacement furnished by the shipowner or by anyone employed by him. The next resource was then to utilise the tonnage measurement for the purpose. The under-deck tonnage of a ship when measured by Rule I. of the Act of 1854, is the cubic content of her inside volume expressed in tons of one hundred cubic feet each. An elaborate plan was proposed by the Chief Surveyor of Lloyd's depending upon an assumed relation between the length, breadth, and depth shown upon the register, and the under-deck register tonnage. In former articles we have fully investigated this plan, and, we believe, have demonstrated clearly that there is no such uniform relation, and that the method depending upon the assumption was too rough and inaccurate to be adopted; if it were indeed desirable to adopt any method having for its specific purpose the marking of a load-line. The proposals of the able and indefatigable Secretary of the Liverpool Underwriters' Registry for a method of marking the freeboard of ships have hitherto certainly had one merit which those of Mr. Martell lacked, they have been distinguished by simplicity. We have, we believe, shown in former articles,* that the complexity of the one plan was but complex inaccuracy, the other although less complex was at the same time more inaccurate. Indeed, Mr. Rundell's method involves all the sources of error to which Mr. Martell's was liable, and in addition to them it has others, from which the latter is free. In directing attention to these we will refer to the latest development of Mr. Rundell's plan, but before examining his practical method in detail we will advert briefly to the use which is to be made of the percentages when obtained.

In his most recent plan, Mr. Rundell proposes to mark a scale on every ship's side, showing the percentages of volume cut off at various points from the deck downwards, indicating by special marks no less than six load-lines, which are respectively denominated *fair*, *full*, *very full*,

* *Nautical Magazine*, December, 1873, and June and December, 1874.

deep, very deep, too deep. None of these, however, is to be a hard-and-fast line; in Mr. Rundell's words:—

“The remedy I offer will still allow the shipowner to load as deeply as the exigencies of his business may require, only it makes him subject to a special engagement with his crew when his vessel is loaded beyond certain well-defined limits. It relieves the magistrate from the need of weighing conflicting technical evidence when questions of overloading are before him. It relieves the Board of Trade from the consideration of all questions of seaworthiness which depend upon load-draft, and relieves them also of their present doubts whether, in fairness, they ought to have prevented certain vessels from sailing.”

“The limits of load-draft for this purpose can be easily and systematically defined, if the Legislature will decide:—(1.) That all vessels shall be marked so as to show percentages of buoyancy, in terms of registered tonnage. (2.) That a certain percentage mark, selected by recognised authorities, be taken as a fair load-draft. (3.) That vessels showing five per cent. less buoyancy than this, shall, for technical or legal purposes, be deemed ‘too deeply laden.’”

Let us first consider the second and third of these propositions, and at the outset we must confess that we cannot see how this proposal affords any basis for a settlement of the question. If the Legislature can go so far as to fix upon a fair load-line, why do more? Anything deeper than a fair load-line must be unfair to somebody, and we think any magistrate called upon to decide a case, and having legal data before him showing a fair load-line, would insist upon that being *the* load-line. However, in the paper before us it is not even proposed to limit a ship to the *too deep* line—“the shipowner may load as deep as the exigencies of his business require.” We have always opposed a hard-and-fast line precisely because we could never see our way to any legal definition either of a *fair* or of a *too deep* line; if we could see any such solution of the question we could certainly not stop where Mr. Rundell has stopped. If the law can say when a ship is *fairly, fully, very fully, deeply, very deeply*, and *too deeply* laden, is the law to stop short there and allow ships to go to sea, which are demonstrably over-laden. We can conceive that a graduated freeboard might indicate coasting, Baltic, Atlantic voyages, or summer and winter, or perhaps might be modified by the nature of the cargo, but we certainly think that if we could get so far as to mark a *fair* load-line, we should not care to undertake the supererogatory task of marking a *too deep* line. Nor are we at all enamoured of the idea of dispensing with technical evidence at an actual inquiry by having the general question settled technically beforehand. If the marks were put on a ship by experts, as proposed, we may presume that they would consider all the facts of the case which could possibly be

considered at the time. Perhaps we are assuming too much even in this, for the business would be done perfunctorily, and, it might be, often imperfectly. But supposing first-rate men to be employed in every case, and all the facts about the vessel's form, construction, superstructures, and strength to be considered, are these all the necessary data? The altered conditions brought about by the deterioration of the structure might be met by a fresh marking, but would not technical evidence always be needed to fix the relative importance of the intended voyage, the season of the year, and the nature and stowage of the cargo, all of which, as everybody knows, should be considered in deciding upon the safe load-line. A line which under one set of circumstances would be *deep*, or *too deep*, would on another occasion be *fair*. Nor are we sure that 5 per cent. would at all comprise the limits between which the safe load would vary with varying circumstances.

We believe that Mr. Rundell himself has remarked, in one of his many able *brochures* on the freeboard question, that a few inches of extra immersion may be of vital importance to the shipowner. People who know nothing of the subject, may ask what is 5 per cent.? What practical difference will that make to the owner? But if, as is frequently the case, 95 per cent. of the freight goes for expenses, then an extra 5 per cent. simply means double profits. Thus we see that by interfering capriciously, ever so little, we may be ruining a shipowner. Of course, this is no argument against just and rightful interference, only when we interfere let us be very sure we are right. All who are interested in shipping are very much indebted to the able Secretary of the Liverpool Underwriters' Registry, for his indefatigable labours in connection with the load-line question, and in former articles we have had much pleasure in expressing our agreement with many of his views. It has been, therefore, with much reluctance, that we have so severely criticised the paper before us. We are glad to reckon him, as well as the chief-surveyor at Lloyds, among the opponents of a hard and fast line of freeboard, but we believe that if either "lines of reference," or "fair" and "too deep" lines were marked on a ship's side, they would simply be hard and fast lines under another name. Place any line whatever on a ship's side as a load-line, and it will become, in most cases, *the* load-line; if it give her more freeboard than is *always* necessary, the owner suffers unjustly; if it give her less than is *ever* necessary, legislative sanction is given to unseaworthiness.

The other proposal contained in the paper before us is to mark percentages of every ship's volume on her side as a guide to determine her freeboard. The Government Bill contains a provision for marking a freeboard scale of feet on the side of every ship from the main-deck downwards. It has been remarked that this may lead to the building of

ships with no sheer and no round of beam, or even to a rise in the deck just where the scale is marked, in order to increase the apparent freeboard. Again, lineal freeboard is not the sole consideration, the proportion of volume above water is certainly of much importance; in the opinion of many eminent authorities it is all-important. We do not go so far as this, but we certainly think that the mere marking of a scale to show lineal freeboard without some corrective, may lead to some of the evils we have indicated. There have been two distinct suggestions as to how percentages of volume should be published for the information of those concerned. One is that the depth from the main-deck of a point indicating some given percentage should be inserted in the Mercantile Navy List; the other that a scale should be marked on a ship's side showing several percentage marks. Mr. Rundell's method of obtaining the positions of the various percentage marks which would be required is as follows:—

The area of a horizontal longitudinal section of the ship above the load-line is obtained by multiplying the breadth (registered) by the length (registered) and by $\cdot 8$. This area divided by 100 would give the number of registered tons in a horizontal zone of the ship, at that place, one foot in depth. Consequently, the register tonnage of the ship, divided by the longitudinal area, gives as quotient the thickness (in decimals of a foot) of a zone which is equal to one-hundredth of the under-deck register tonnage. Now, if it be required to mark a point which shall have, say, thirty per cent. of the tonnage above it, multiply the quotient by thirty, and we have the distance of such point in feet and fractions of a foot below the deck of the ship, and so can set it off on the ship's side. To this plan there are two grave objections. In the first place it is obvious that the accuracy of the method depends upon the area of the water-line, being, as it is assumed to be, pretty nearly equal to eight-tenths of the rectangle of the breadth and length. Such is, doubtless, the case in the majority of the ships which have come under the observation of the Liverpool surveyors, but we can state it as a fact that $\cdot 9$ would be required in a large number of ships, and that in some the multiplier would be $\cdot 75$. A system inaccurate to the extent of ten per cent. on one side and five on the other is at once shown to be inapplicable for any other purpose than rough approximation. A second considerable error is caused by the varying sheer in ships, the extent of such variation being apparently very imperfectly apprehended by the proposer of the plan. It is proposed that a difference of one per cent. be made in the percentage of spare buoyancy as an allowance for excessive sheer. This again, we observe, would meet the case of Liverpool ships, but would be altogether inapplicable for vessels built at such ports as Middlesbro' and Hartlepool, where excessive sheer is the fashion.

It appears to us essential that any method either for marking percentages of buoyancy, or for marking a load-line, should do what it professes to do *with at least as much accuracy as it is possible to attain in measuring a vessel's freeboard on her leaving port.* It would be intolerable if from mere imperfectness of the method of marking spare buoyancy a ship's cargo should be reduced, and her owner subjected to pecuniary loss. The truth is, we apprehend, that no system of marking percentages can be devised upon the slender basis afforded by the particulars of the tonnage of a ship recorded on her register. In our number for May last we proposed a plan, not for regulating freeboard, but for cutting off any required percentage of the under-deck tonnage as spare buoyancy. We there pointed out that this could be done with tolerable accuracy from the elements of the tonnage in the hands of the Board of Trade. The data required are in official keeping, and thus it appears that if register tonnage is to be utilised in connection with freeboard, it can only be done by the Board of Trade. The method described at length in our former article, to which we have referred, affords an accurate means of marking percentages of the under-deck register tonnage. For nearly every ship built and registered in the United Kingdom since 1854, there are on record sufficient data to give her internal form, and thus to enable the rule to which we have referred to be applied. We consider it no drawback to this rule that it can only be carried out by the Board of Trade; indeed, we are of opinion that any such calculation should be exclusively under official management.

It may be said, indeed, as we said when offering the curve of tonnage to the notice of our readers, that to cut off a definite proportion of the under-deck tonnage was not the same thing as to cut off the same percentage of the displacement to the deck. We believe that this would very slightly affect the value of the result, but with a very little more trouble the thickness of the side and the depth of floor being obtained, might be put on the tonnage drawing, and thus the actual displacement of the ship would be found, and from the latter any percentage. Thus the obtaining of a scale showing freeboard corresponding to given percentages of spare buoyancy is merely a question of more or less work of the same character as the work which is done in the checking the official measurements for tonnage. We shall see further on that although the actual displacement is for many reasons a desirable basis to go upon, the inside volume of the ship has some special advantages of its own. As a mere matter of comparison between ship and ship it would not matter whether the inside or outside measure were taken; the required data would be more readily and easily obtained for the former than the latter.

The important point in any marking of a ship's side is, we conceive, to mark only indisputable facts. A scale of feet starting from the main

upper-deck—that is, the deck to which full scantlings are carried, expresses no opinion, only affords the means of noting facts. Similarly a scale, showing percentages of volume, starting from the same deck, would not depend upon the opinion of even the most expert of experts, but would give the means of forming an opinion. It would simply indicate that if a water-line were at the 5 per cent. mark, then 5 per cent. of the under deck volume was above water. But then there is this difficulty: how are spar-decks and poops to be dealt with? Mr. Rundell proposes to decide in each case the value of such erections for the safety of the ship, and assess their content in terms of under-deck tonnage. Whether a ton in a spar-deck or awning-deck should be considered of equal value with one-half, or one-third, or any other fraction of an under-deck ton, would, by his plan, be a matter for judgment to be decided before marking the ship, the marks to be placed accordingly. Matters of judgment become matters of opinion, and from that matters of difference. If any percentage scale be marked, let it simply show the indisputable percentages of under-deck tonnage, and anyone understanding the question can introduce the tonnage of a spar-deck or poop at any distinct value that may be deemed at the time desirable.*

The special value of using the under-deck tonnage rather than the volume of the displacement as the basis of the marking is, that the actual value of the deck erections or superstructures may always be estimated from their tonnage as shown on the ship's register.

The curve of tonnage described in our number for May last would be equally useful if the alternative proposal of recording the depth of a water-line, cutting off some given percentage in the Mercantile Navy List, were carried out. It would be desirable to record two such percentage marks, and then from them any others which might be desired could be approximately obtained. This is owing to the fact that the first

* Let us suppose the case of a ship of 1,000 tons below deck, and we have found by calculation that a line 2 feet below the deck cuts off 180 tons—that is, 18 per cent. Another line, 4 feet down, cuts off 300 tons, or 30 per cent., then we shall know that, between the 2 feet and 4 feet marks, each tenth of a foot freeboard corresponds nearly to 6 tons. Suppose, now, this ship to have a spar-deck of 400 tons, and that 2 tons in the spar-deck be considered equal to 1 ton below the main-deck, then adding the half of 400 to the under-deck tonnage, we obtain 1,200. If, now, we want the freeboard which will give us 30 per cent. of the whole, first we take 30 per cent. of 1,200, which is 360; subtracting 200, the estimated value of the spar-deck tonnage from this, we have 160 left as the tonnage to be cut off below the main-deck. The 18 per cent. point, at 2 feet, cuts off 180 tons, so our required point will be at 20, divided by 6—that is, at 3.33 feet above the 2 feet mark, or at 1.67 feet below the main-deck. A similar course would be adopted if 3 tons in a spar-deck were to be assessed as 1 under-deck ton.

mark, say five per cent., would be high or low according as there was much or little sheer, other marks after the first would follow in nearly regular gradation for some distance down.

An objection which may be made against the marking of percentages on a ship's side is that they would, if marked for an even keel, be incorrect when the vessel was much trimmed by the stern. We are inclined to think that the difference would be trifling except in extreme cases, but if it should be found to be considerable, it might be met by requiring the shipowner to say, within a little, what the usual trim of his ship would be, and the calculation of percentages could be made accordingly. We would observe that at present in measuring freeboard it is usual to note the draught of water also, both at stem and stern, thus there is with the record of clear side also a record of trim.

We have recently noticed the revival of an old notion about freeboard, and as the whole question is likely to be much discussed during the next few months, it may be desirable for us to refer to this point. It has been frequently said, and we doubt not will be said again, "Mark a ship's light-line and then mark her load-line, and make the displacement between the two her register tonnage, thus settling at once the two questions of tonnage and freeboard. It will be less of a grievance to limit a ship's carrying capacity if she is only assessed for light and harbour dues, &c., upon the capacity so limited." The first answer to this is that freeboard and tonnage are both complicated questions, and only increased complication would result from attempting to deal with them together. The present system of tonnage measurement has worked well, and is, in its main features, approved by all concerned, so much so, indeed, that it is used by the United States, France, Germany, Denmark, Austro-Hungary, Italy, Sweden, and Spain. Suez Canal tonnage, also, is mainly based upon the English system. Therefore, in interfering with the register ton you interfere with an international unit of ship measurement, and unsettle what it has taken many years to settle in its present form. A still stronger reason against a displacement tonnage is, that it is not a fair assessment of a ship's value to her owner. Ships are not merely payable according to the dead-weight they can carry. Passenger steamers, for instance, although they habitually show more freeboard than vessels exclusively employed in carrying cargo, are equally profitable, and it is well-known that a light cargo, even so light as to require considerable ballast, will pay as much as a heavy one. If a displacement tonnage were adopted it would be very easily evaded, thus:—Suppose an iron ship built to be employed in carrying light goods. It being ascertained what minimum amount of ballast she would always have on board, that ballast would be wrought in with her structure, and her light-line would thus show a deeper immersion, and at the

same time the load-line would usually show a large free side, and thus the distance between them, the payable tonnage, would be decreased both from above and below.

Much has been said as to where the freeboard and percentage scales should be marked; the Government Bill fixes upon three-fifths of the ship's length, from forward, for the former, that being usually the lowest point of the side. On the other hand it has been urged that amidships is the fittest place. We think this is a matter of but slight importance. On the whole, it might perhaps be the best plan to mark the scale at the lowest point of the main-deck, wherever that might be; this would prevent any attempts to obtain an incorrect scale by raising the deck just where it would come. In conclusion, we would urge that whatever is done in the way of marking ships, or inserting particulars of them in the Mercantile Marine List, only indisputable facts should be so marked or inserted.

AN ORIGINAL PROPOSAL FOR A MERCHANT SHIPPING BILL.



CORRESPONDENT at one of the ports, who remarks that "all sorts of hobby trotters are drafting independent bills," sends us the following. It opens up a new view altogether, in drawing a distinct line between liability for loss of life and liability for loss of property, and in making the "*res*" or their equivalent liable, instead of the person. If there be no "*res*" or equivalent forthcoming, then *the person* is to take their place, until the equivalent for the "*res*" is produced:—

Title.—An Act to discourage the loss of seamen's lives in unseaworthy British ships, and to punish those owners and other persons who send or assist in sending such ships to sea; and, further, to assist in the education of the children of seamen drowned by wreck.

Preamble.—Whereas the prosperity, strength, and safety of this United Kingdom, and of Her Majesty's Dominions, do greatly depend on a large, constant, and ready supply of seamen, and on leaving commerce unfettered; and whereas it is therefore expedient that no more seamen should be drowned than is absolutely unavoidable, and that shipowners who do not lose seamen should not be hampered by, or with, or on account of, those who do; and whereas it is also expedient that the conveyance of goods by the sea in British ships should be left free and unfettered, where

it is unattended with avoidable loss of life; and whereas it is inexpedient to interfere with sailing ships in the coasting trade, as seamen in that trade can themselves judge of the seaworthiness of their ships; and whereas it is also expedient to discourage the sending of British sailors to sea in ships that are not likely to reach their destination, and of whose condition they are ignorant; and whereas it is expedient to punish persons who send ships to sea away from the coasts without any reasonable chance of their reaching their destination; and whereas it is impossible to limit marine insurance; and whereas it is unwise to interfere with it unless in any special case it has contributed to the sending of an unseaworthy ship to sea; and whereas an unseaworthy ship is generally sent to sea after her owner is guaranteed by some other person against pecuniary loss in the event of his ship disappearing; and whereas some shipowners, instead of laying out money to make their ships seaworthy, lay it out in paying extra premiums to underwriters; and whereas underwriters who insure an unseaworthy ship must be regarded as parties by whose assistance the ship is sent to sea; and whereas it is not right that underwriters any more than owners should make profit by, and then evade the responsibility they incur, civilly and criminally, in receiving payments on account of unseaworthy ships; and whereas no person shall in the United Kingdom make profit by the risking or losing, or the assisting in risking or contributing to the losing of life in unseaworthy ships; and whereas it is right that persons who cause loss of life by sending or assisting or contributing towards the sending of unseaworthy ships to sea should be severely punished; and whereas the enacting of penalties is of no use; and whereas it is only right that the relatives and children of seamen lost from such ships should be fully provided for at the expense of the parties who bring about and assist unseaworthy ventures that cause or result in loss of life. Be it therefore enacted as follows, viz. :—

Section I.—In the following cases, that is to say :—

- (a) When any sea-going British ship founders, otherwise than through stranding or collision with another ship, and the life of any person on board the ship is lost or jeopardized in consequence.
- (b) When any sea-going British ship is abandoned otherwise than through stranding or of collision with another ship, and the life of any person on board the ship is lost or jeopardized in consequence.
- (c) When any sea-going British ship becomes water-logged, and the life of any person on board the ship is lost in consequence.
- (d) When a steam boiler on board of any steamship explodes, and the life of any person on board the ship is lost in consequence.

- (e) When, owing to the non-appearance of any sea-going British ship she and her crew, or any of them, are deemed to be missing ;
- (f) When any British sea-going ship is proved in any case to have been unseaworthy, and the life of any person on board the ship is lost or jeopardized in consequence.

Then, instead of paying the assured, the underwriters (if there be any) of the hull and machinery of, and freight to be earned by such ship, shall, within twenty-one days of such foundering or abandonment, casualty, or damage being reported at Lloyd's or published by the Board of Trade, or within twenty-one days of the posting at Lloyd's, or of publication by the Board of Trade that the ship is deemed to be missing, pay into the High Court of Admiralty the sum or sums payable on the policies of insurance on such ship and freight, as well as all premiums received in the case ; and such payment shall be made to the said Court whatever may be the conditions of the policy of assurance, and whether the policy is a voyage or a time policy.

Section II.—If any ship coming within Section I. of this Act is not insured at the time of the loss, abandonment, damage, casualty, or disappearance, the managing owner, or, in his default, the other registered owner or owners of such ship, or if they fail to do so the mortgagees (if any) of the ship shall pay into the said Court the sum of eight pounds for every ton of the ship's gross registered tonnage.

Section III.—If default is made in payment within the times named in Sections I. and II. of this Act, then the sum of five pounds per centum per diem, shall become due for every day's delay in making payment ; and if payment is delayed beyond thirty days then the bodies of the underwriters, managing owner, or registered owner of the ship (as the case may be), shall, under process hereby required to be issued by a competent court, be secured and lodged in gaol until the gross sum due under the preceding Sections is paid into Court ; provided, however, that no person shall, under this Act, be detained in gaol for non-payment of sums due, beyond two years on account of any one default.

Section IV.—If the owner of any ship desires to obtain payment or repayment of any sum or sums of money paid into the High Court of Admiralty under Sections I., II., and III. of this Act, he shall apply to such Court in such manner as such Court may from time to time direct, and shall produce evidence that immediately before her departure on her last voyage all reasonable means were taken to make and to keep the ship seaworthy ; that she was not overladen, and was not improperly laden ; and that the loss, abandonment, damage, or casualty to the ship arose from circumstances over which he, and those having the management of his business had no control ; or that he or his agents knew that

the ship was unseaworthy, and the sending the ship to sea in an unseaworthy condition was, under the circumstances, reasonable.

Section V.—Unless the Court are satisfied that all reasonable means were taken to make the ship seaworthy immediately before her departure on her last voyage, and to keep her seaworthy, and that she was not overladen or was not improperly laden; and that the loss, abandonment, damage, or casualty did not arise from circumstances over which the owner and those having the management of his business had, or ought to have had, control; or, that the sending of the ship to sea, knowing that she was in an unseaworthy condition, was, under the circumstances, reasonable, the Court shall refuse the application of the owners with or without costs as the Court shall determine; and the money paid into Court shall be retained to be dealt with as hereinafter provided.

Section VI.—If the Court are satisfied that all reasonable means were taken to make the ship seaworthy immediately before her departure on her last voyage, and to keep her seaworthy, and that she was not overloaded, and was not improperly loaded; and that the loss, abandonment, damage, or casualty did not arise from circumstances over which the owner and those having the management of his business had, or ought to have had, control; or, if the Court are satisfied that the sending of the ship to sea, knowing that she was in an unseaworthy condition, was, under the circumstances, reasonable, the Court shall direct payment of the money to the owner, with or without deduction on account of the relatives of any seaman or seamen lost, and with or without costs, as the Court may determine.

Section VII.—If the underwriter on any ship or freight coming within the operation of the first Section of this Act desires to obtain repayment of any sums of money paid into the High Court of Admiralty hereunder, he shall apply to such Court in such manner as the Court may, from time to time, direct; and shall produce evidence—

- (a) Of the exact amount of premium he received from the assured in the case.
- (b) The current rates of premium at that time ruling for ordinary risks in the Trade.
- (c) If he received a higher premium than the current rates for ordinary risks, the reasons which led him to take the risk, and to require the rate of premium he did require; and that the policy was not a wagering policy; but the premiums were fair and reasonable under the circumstances.
- (d) That he had every reason to believe that the ship was in every way seaworthy.

- (e) That he did or did not know the names of the owners of the ship, and did or did not know whether they had lost ships previously, or the names of such ships, if any.
- (f) That he used due diligence in transacting his business, and had no reason to believe that the risk was more than an ordinary risk, or if more than an ordinary risk that the risk was still a proper one ; or
- (g) That he was led to receive the premium he did receive under false and fraudulent misrepresentations on the part of the owner.
- (h) And such other evidence of diligence and *bonâ fides* on his part as the Court may require.

And if, on hearing the case, the Court shall be of opinion that the underwriters did use due care and diligence to ascertain the seaworthiness of the ship and the character of the owners, and were fully justified in underwriting the risk, or that the owners of the ship have, by false and fraudulent misrepresentations, effected an insurance on her, or on the freight to be earned by her, the Court shall order repayment to the applicant under this section, accompanied by such order as to costs, and as to payment to the representatives of seamen, whose lives were lost in, from, or on board of the ship, and shall attach such conditions as to prosecution of the insured as the Court may think fit, otherwise the Court shall refuse the application.

Section VIII.—In all cases in which the application of the owners or underwriters is refused by the Court under the third and sixth Sections of this Act, the monies remaining in Court under the first and second Sections hereof, shall be carried to and form a “Compassionate Fund,” which shall be chargeable as follows :—that is to say—

- (a) For payment of any costs that the Court may specially order to be paid thereout under Sections V. and VII. of this Act ; and
- (b) For the maintenance of school ships for educating boys for sea service.

These latter payments shall be made under the direction of the Lords Commissioners of Her Majesty's Treasury, due regard being had to the amount in the hands of the Court for the time being.

Section IX.—This Act shall not apply to any sailing ship employed in the coasting trade of the United Kingdom, nor to any fishing vessel under 100 tons register, nor to the owners, masters, and crews thereof ; nor shall it apply in any case whatsoever, other than in the cases named in the first Section hereof ; and it shall apply only in the cases named in that Section when the life of some one or more member or members of the crew of the ship is lost or jeopardized, or when the said member or members is or are missing, or if some one attempting to rescue them is lost in consequence of the casualty or damage to, or of the loss, abandonment, or disappearance of, the ship in which he or they was or were at the time serving.

Section X.—Nothing in this Act contained shall lessen or remove any liability that may attach, either by statute or at common law, to any owner of a ship of making good, or to paying compensation for, any loss or damage caused by unseaworthiness to any cargo on board his ship. Nothing in this shall interfere with the duty of the Board of Trade under any other Act of Parliament to detain ships alleged or suspected to be unseaworthy, nor with their duty of prosecuting owners whose ships are sent to sea in an unseaworthy condition.

[If such an Act as the above were to become law there would be no question ever after as to the responsibility of persons sending unseaworthy ships to sea, and there would be no necessity to trouble about misdemeanours or fancy penalties or restrictions on trade.—ED.]

ARCTIC EXPEDITION OF 1875.

THE papers just presented to Parliament by command are very interesting and exhaustive. The first paper is from the pen of Captain Evans, R.N., the Hydrographer, and is one of the very best compilations on the subject of arctic exploration that we recollect to have read. As an official paper, presenting to my Lords the whole case at one view, it is perfect. We only regret that our limited space does not suffer us to reproduce Captain Evans's memorandum. The paper which will be most interesting to the general reader just now, is the report of the Committee appointed by the Board of Admiralty to consider the whole subject, and that Report is as follows :—

Admiralty, Whitehall, 4th February, 1875.—In pursuance of the instructions of the Lords Commissioners of the Admiralty, conveyed to us in their Secretary's letter, dated 24th November, 1874, the Committee have held nineteen meetings between the 1st December, 1874, and the 4th of February, 1875, and have the honour to report as follows on the several points submitted for their consideration :—I. The scope of the proposed expedition. II. The orders which should be given for organizing and carrying it into effect. III. The description of the ships to be employed. IV. The most suitable place for winter quarters. The foregoing points, I., II., III., IV., are so intimately connected, that the Committee propose to deal with them collectively, and without adhering to the order in which they occur.

Description of Ships.—1. The ships to be employed for the main expedition should be two screw steam vessels, strengthened and fitted

for arctic service, and capable of carrying coal for fuel, provisions, stores, &c., for at least three years, for a complement of about sixty to each ship, and as much coal for steaming purposes as circumstances will admit of, without being too deeply immersed. The two vessels selected by the Admiralty on the recommendation of the Committee—viz., H.M. ship *Alert* and the sealing ship *Bloodhound*,* appear to be in all respects suitable for the service. 2. It appears desirable as a measure of precaution, that fifty or sixty tons of coal should be sent to Disco, for the use of the expedition, either in one of the whaling vessels which start earlier than the Polar ships or in a hired transport. 3. Should the expedition not have returned to England by November, 1876, a third ship should be prepared and strengthened, to leave England in the spring of 1877, to be placed as a depôt and relief ship at some position to be decided upon near the entrance of Smith Sound, probably inside Lyttelton Island; her special duties, and the instructions to be given to her commander, will be referred to hereafter.

Scope of the Expedition.—4. The scope and primary object of the expedition should be to attain the highest northern latitude, and, if possible, to reach the North Pole; and from winter quarters to explore the adjacent coasts within the reach of travelling parties. The limits of ship navigation should be confined within about the meridians of 20° and 90° of west longitude.

The Route.—5. The route by Smith Sound appears by far the preferable one to adopt, for the following reasons:—*a.* Its southern entrance, in the latitude of 78°, has been found free from ice by the several vessels which have visited it since 1852; of late years the Sound has been penetrated for a considerable distance by American exploring expeditions, notably by Hall, who reached and wintered beyond the 81st parallel without much difficulty, and the vessels comprising these expeditions were far inferior in power and equipment to those which will compose the present. *b.* Smith Sound is known to have a continuous coast line on either side up to the parallel of about 82°, the highest point yet reached, with comparatively well determined points, where records of the progress of the expedition could be deposited, and depôts of provisions placed, if necessary. There are likewise the Danish settlements on the west side of Greenland to fall back upon by boats, should the expedition be hard pushed, and the steam whalers frequent a high latitude in Baffin's Bay every summer. *c.* This route, moreover, offers the best—indeed the only—promise of a continuous coast line stretching far northwards, and upon this fact the prospect of reaching the Pole by travelling parties mainly depends. It is the only route, so

* Since renamed the *Discovery*.

far as our knowledge extends, where the operations of an expedition can be confined within such limits that succour would be reasonably certain of reaching it. *d.* Finally, animal life has been found to exist to a considerable extent in the highest latitude yet reached up Smith Sound—an advantage which cannot be over estimated as regards the health and comfort of the crews ; and, as a matter of fact, Esquimaux are found up to the entrance of Smith Sound, who appear to have a knowledge of regions to the northward ; and it is possible that some of their race may be found to exist in a higher latitude than has yet been attained.

Orders to be Given.—6. It appears from experience hitherto gained, that the final departure of the expedition from England may be deferred until the middle of June, though an earlier date, if the equipment of the ships can be hastened, may be desirable in the interests of scientific research. The ships should proceed to Disco, in Greenland, where they would touch, as well as at the settlements of Proven and Upernivik for dogs, Esquimaux drivers, &c., and then pass up to Smith Sound in the prosecution of the enterprise. 7. Both shores in the vicinity of Capes Isabella and Alexander should be examined, in order to select a suitable position for the depôt or relief ship to be despatched in 1877 ; but as such a position cannot be absolutely determined on beforehand, and it is necessary to decide where information will be found by any ship which may be subsequently sent out from England, Lyttelton Island, in our opinion, meets all the requirements of a fixed point for rendezvous. Here a conspicuous cairn should be erected ; one record placed in the cairn, another laid beside it, and a third buried 20 feet due north of it. These records should contain proceedings of the voyage and such information as may be necessary for the commander of the ship to be despatched in 1877. 8. The ships should then proceed up Smith Sound with all speed, so long as its navigation is not seriously obstructed by ice, carefully scrutinizing its shores for places of security for the ships, and stopping only to erect cairns on such conspicuous points as may be conveniently landed on. Similar information should be placed at these cairns, and after the same method as described for the cairn on Lyttelton Island. The commander will not fail to bear in mind, that these records of his progress and of any change of plans he may have found necessary to make, form an important feature in his instructions. It is desirable that these cairns should not be more than sixty miles apart. By way of illustration we would name Capes Frazer, Back, and Beechy on the western shore, and Capes Jackson and Bryan on the eastern shore ; to these prominent headlands the attention of any searching party would naturally be directed. A small depôt of provisions and a boat might also be advantageously left at one or more of these points, to serve either for exploring parties or to aid in the event of an abandonment of the ships. 9. The general

design of the voyage should be, that while both ships would share as far as possible in the objects of discovery and exploration, one must be so placed that she would not only serve for the crew of the other to fall back upon, but also, that the united crews could, without doubt, escape from her to the relief ship at the entrance of Smith Sound, by means of their sledges and boats over the ice. Consequently, the second ship must not be carried northward of the 82nd parallel; such a position would secure this most important object, and also afford every prospect of exploration into very high latitudes. 10. The eastern or the western shore may be selected for her winter quarters according to circumstances; the advantages of the former are, that animal life has been found to exist there throughout the winter, and that the ship would be favourably placed for exploring the northern coast of Greenland, or adjacent land in the spring of 1876: on the other hand, if continuous land on the western shore is found, it may, in the judgment of the officer in command, afforded a counterbalancing advantage, in the greater facility and security of communication between the ships, and their co-operation in subsequent operations; this point must, therefore, be left to him to decide; if he should select the western shore, then he would be careful to leave a record on the eastern side of the probable position of the second ship; and in the absence of any conspicuous cairn, a ship or party visiting the bay wintered in by the *Polaris* in about $81^{\circ} 35'$ north, would naturally seek the position of Hall's grave, where, and at 20 feet due north of it, records would be expected to be found. 11. The commander of the second ship, wherever placed, would follow such instructions as he received on parting company, or, subsequently, from the officer commanding the expedition. 12. It should be a matter for consideration, whether, before parting, the leader would leave a depôt of some six months' provisions with the second ship, in the event of his own crew having to retreat, but time and circumstances must govern his decision on this point. 13. Having assured himself of the safety of his second ship, and increased his own crew by such portion of hers as he may deem necessary to enable him to accomplish a sledging attempt to reach the Pole, this being the main feature of his voyage, and also the exploration of his share of the coast line extending northwards, the leader of the expedition should then push on northward, and explore by ship as much of the unknown area as the season and the state of the ice would permit. But it is not contemplated that the two ships should winter at a greater distance apart than about 200 miles; and the officer in command, if he advance with the ship beyond that point in 1875, should use his best endeavours to return within the 200 miles distance, or the case may arise, in which it may be even wise to rejoin his consort and unite their forces for exploration in the spring and summer of 1876.

14. Should the advance ship, after leaving her consort, carry continuous, or nearly continuous land up to a high northern latitude, the officer in command should avail himself of opportunities to land small depôts of provisions at intervals, with cairns and records as already described; and also to deposit at the most northern station, a depôt of provisions and a boat, for his spring travelling parties. 15. In the absence of continuous land, it must not be lost sight of that sledge travelling has never yet been found practicable over any considerable extent of unenclosed frozen sea, although conditions may be found to exist which would enable parties to travel for limited distances by sledge and boat operations combined, and for this purpose the best boats and sledges that can be devised have been supplied. The leader having increased his own crew by such portions of the crew of the second ship as he may deem necessary, it is expected that he will have at least six strong sledge parties and four dog sledges. In early spring his sledge exploration will commence, and all these parties should be employed in the first instance to push out the North Pole party (which should be provided with at least one boat) and upon return from this work, some weeks later, the parties for the exploration of the coast lines should be sent out. 16. It must be left to the officer in command to furnish ample instructions to his second, especially in regard to the exploration to be undertaken by him during the spring and summer of 1876, should the ships winter apart; and in this event, the first consideration should be, in the autumn of 1875 or early spring of 1876, to ascertain their respective positions; this, unless under very unfavourable conditions, would be probably accomplished by dog parties, without interfering much with the objects of exploration. In connection with this subject the leader should bear in mind the necessity of giving such instructions as would govern his proceedings in the event of this proving to be a final separation. 17. It will be impossible to give any positive or detailed instructions for the guidance of the officer in command of the expedition after quitting his consort, further than that he should use his best endeavours to rejoin her in the navigable season of 1876, and in company with her return to England, provided his spring exploration has been reasonably successful. But in the event of another season being absolutely required to complete a reasonable amount of exploration, still it will be a matter for his careful consideration, whether it would not be advisable that the advanced ship should fall back towards her consort from any advanced position she may have wintered at; and, should it still remain doubtful whether a final retreat could be effected, the second ship might not be moved southward to such a position as would secure it. 18. In 1877 the leader should be at full liberty to abandon his ship as early as convenient, if, in his opinion, the explorations of the preceding year had been final, or, if from his experience of the navigable seasons

of 1875—76 that her escape in 1877 would be doubtful ; and he should so time this abandonment as to reach the relief ship at the entrance of Smith Sound not later than the first week in September 1877. In the event of his remaining out in the hope of extricating his own, or it may be both ships, during the summer of 1877, he should consider the propriety of reducing his own or both crews to a minimum, sending away all that can be spared to the relief ship at Lyttelton Island. In this case one or both ships would remain out for the winter of 1877, if unable to extricate themselves in the summer of that year, a contingency which is hardly possible. It is not desirable, under any circumstances, that a single ship should be left to winter in the Arctic regions. If one ship remains up Smith Sound, a second ship should remain at the rendezvous at its entrance.

19. It does not appear that any more definite instructions, than are embraced in the foregoing remarks, can be furnished to an officer already familiar with Arctic service, although there are many important points and details to which it might be desirable hereafter to direct his attention. With the ample means at his command, he may vary the detail according to circumstances, but the main points laid down by the Admiralty for his guidance can always be kept in view, and all other objects should be subordinate to them.

20. He will be aware that in the summer of 1877, a relief or depôt ship will be dispatched to Smith's Sound, and that she will take up, if possible, a position to be agreed upon with him before his departure from England, subordinate to any suggestions which may be deposited in the cairn at Lyttelton Island. The instructions to this ship, so far as they need be decided on at present, should be to be found at the rendezvous agreed upon not later than the last week in August, 1877. She should be equipped and fitted for wintering in the Polar Seas, and, in the event of there being no tidings of the expedition nor instructions to the contrary, in the records to be found at the rendezvous, she should be ordered to winter at the position agreed upon.

21. If, under the circumstances alluded to in paragraph 18, the retreating parties should arrive at Lyttelton Island in 1878 and find no relief ship there, or no intelligence of her, it will be taken for granted that some unforeseen accident has prevented her reaching Lyttelton Island, and in that case the retreating parties must rely on their own resources for reaching Upernivik, looking out, of course, for the whalers on their fishing grounds between the months of May and August. The expedition will, in any case, on its return, revisit the cairn on Lyttelton Island and leave records.

22. There is one other point which it may not be out of place briefly to refer to, notwithstanding that the officer in command is an experienced nautical surveyor, and it is this, that no minute surveys are necessary, nor, on an expedition of this character, are they possible. As a rule, the requirements of hydrography and geography will be amply provided for,

if the principal points discovered are determined with all the accuracy attainable, and the prominent features and general outline of the shores sketched in as faithfully as time and circumstances will admit, soundings being obtained when practicable. 23. The scientific memoranda furnished by the Societies at the request of the Admiralty should be supplied to the commanding officers, with instructions that the various suggestions therein contained should be carried out as far as circumstances will admit. 24. Should the season of 1875 be so unfavourable as to prevent the expedition from penetrating beyond the 79th parallel, it is for their Lordships to decide whether the ships would winter there or return to England and renew the attempt the following year.

V.—*The various kinds of stores, provisions, and clothing which will be required.*—With the assistance of the two officers placed at their disposal by their Lordships, viz., Dr. David Lyall, Deputy Inspector-General of Hospitals and Fleets, and Mr. James Lewis, Paymaster, R.N., both of whom have had considerable experience in Arctic Service, the Committee have carefully considered all points connected with the provisions and clothing, and have decided on the species and quantities of each to be supplied to the expedition, together with scales of daily issue of the former, subject of course to any modification which the officer in command may, from time to time, feel it desirable or necessary to make. Lists also of the various kinds of stores requisite for the equipment of the *Alert* and *Bloodhound* for Arctic service have been drawn up.

VI.—*The preparation of boats, sledges, fittings, &c.*—The construction of the boats has been considered with a view to their employment on ordinary service, to their adaptability for navigating among ice and to their portability for carrying on sledges, and their numbers have been determined on the principle, that they should conveniently carry the whole of the crews, with ample provisions, under any contingencies which can be provided against. In regard to sledges, the numbers have been determined on—viz., about 26 for both ships, and their construction is left to Sir Leopold McClintock, under whose superintendence the expedition is being fitted at Portsmouth.

VII.—*Whether dogs should be employed.*—The Committee are of opinion that dogs could be employed with advantage for auxiliary travelling and other purposes, and that with this view arrangements should be made with the Danish Government for providing a certain number of those animals, together with Esquimaux drivers, interpreters, &c., at the settlements on the Western Coast of Greenland, where the ships would call for them.

VIII.—*The selection of ice-masters, quarter-masters, &c.*—The Committee recommend that the practice adopted in former expeditions be adhered to—viz., that three ice quarter-masters be attached to each ship, and that

they be selected from the crews of the whaling vessels at the northern ports of the United Kingdom.

IX.—*The sanitary arrangements best calculated to preserve the health of officers and men of the Expedition.*—The Committee are of opinion that the precautions most conducive to health and comfort on an expedition of this character are, first, that the officers and crew should be selected with a due regard to their age and physical fitness; and, secondly, that they should be liberally supplied with the best provisions which can be procured, antiscorbutics and medical comforts, as well as suitable clothing. Upon these points, especially as regards the provisions, the Committee have been guided by their own experience with expeditions under the late Captain Austen and Sir Edward Belcher, in the years 1851-2-3-4, as well as the evidence of several of the seamen who served in these expeditions, and whom they have called before them. The equipment of ships for Arctic service is now so well understood, that the Committee have not thought it necessary to offer any special sanitary suggestions on this point (the more especially as the ships of the present expedition are being fitted and equipped under the personal superintendence of their experienced Arctic colleague, Rear-Admiral Sir Leopold McClintock), further than that all possible measures should be taken to secure warmth, ventilation, and the absence of condensed vapour from between decks.

X.—*A general consideration of all details in regard to the expedition itself.*—Many of the details connected with the expedition have necessarily been mixed up and considered with the main points submitted to the Committee by their Lordships, and will be found recorded in the daily minutes of proceedings, but the most important of the detailed arrangements will be connected with the travelling and sledge equipments, which must be carried out at the port where the ships are being fitted out, under the superintendence of Sir Leopold McClintock, aided by the officers of the expedition. The Committee now believe that they have fully considered and reported on all the important points submitted to them, and as much of the detail as can be decided on at this early period, of the outfit of the expedition; but they would desire to point out that their labours have been carried on, for the most part, during the absence of the leader of the expedition on foreign service; now that Captain Nares has returned to England, and during the progress of the equipment, some modifications of the Committee's views on minor, or even material points, may be found desirable as circumstances develop themselves; and in the event of any such modifications being found necessary, they would suggest that they should form a supplement to this report, in order that a concise and comprehensive record should be preserved of all matters connected with the equipment of the expedition, up to the date of its departure from England. Such a record, if further supplemented by a précis of

the correspondence which may arise during the fitting out of the expedition, would be of great service should it become necessary to equip a relief ship in the winter of 1876-77. Though the Committee believe that their own labours are ended, they would suggest that the services of the two officers who have been associated with them—Dr. Lyall and Mr. Lewis—should be retained for the present, and until the different articles of provisions, clothing, &c., which have been ordered to be prepared are delivered over into store, in order that they may examine and certify as to their fitness for the service. Finally, the Committee would desire to acknowledge the ready assistance and courtesy they have received from the heads of departments and the officers with whom their Lordships have placed them in communication. With the heads of the Contract and Victualling Departments, the Committee have been in daily communication, and nothing could exceed the readiness with which these gentlemen and their staff have met their views and wishes in every respect.—GEO. HENRY RICHARDS, Rear-Admiral, F. L. McCLINTOCK, Rear-Admiral, SHEARD OSBORN, Rear-Admiral.

OUR PARLIAMENTARY RECORD.

The Ship "Mary Ann," February 18, 1875.—Mr. GOURLEY asked the President of the Board of Trade whether it was correct that after receiving a report from the Board of Trade Surveyors at Hull that the ship *Mary Ann* was unfit to proceed to sea without serious danger to human life, an order was subsequently made that the vessel might proceed to sea, provided the owner would execute a bond and sail in her himself: if so what guarantee this gave for the safety of the crew if the ship were unseaworthy.—Sir C. ADDERLEY replied that the case is before one of the superior courts; he therefore abstained from stating anything affecting the points in dispute. It was at the owner's request that the *Mary Ann* was allowed to proceed to Sunderland for repairs, the owner having no means to get the work done at Hull. He requested to be allowed to proceed with her himself, and to give a bond to secure his going to Sunderland. The Board of Trade imposed the further conditions that he should start early on a fine morning, and be provided with a lifeboat, and should go in tow.

Emigrant Vessels, February 21, 1875.—Mr. HAYTER asked the President of the Board of Trade whether, in view of the great loss of life attendant upon the burning of the *Cospatrick*, he would undertake to insist upon a system of fire-drill, similar to that practised on board

Her Majesty's men-of-war, being adopted on board of all emigrant ships ; that the crew should be practised in lowering the boats, and that a proper supply of provisions, with oars and rudders, should be kept at all times in each of the boats.—Sir C. ADDERLEY replied that among the suggestions issued by the Board of Trade to the captains of emigrant ships there is one that a crew of picked men should be assigned to each boat, under the charge of an officer, a steady person, who is responsible for everything being kept at hand and ready for use, and that the men should be exercised in lowering the boats at sea when opportunities occur. There is also a suggestion that the fire-engines, which by law must be carried, should be likewise under special charge, and worked once or twice a week, so as to be kept in proper order. Every equipment, oars, rudder, sails, hatchets, &c., must be in every lifeboat before it is passed by the Board of Trade Surveyor. As to provisioning boats, which some of the best lines do, a further suggestion is now being made by the Board of Trade. With regard to the suggestions as to drill no law enables the Board of Trade to enforce them ; nor, if there were a law, would it probably be possible practically to enforce it.

Missing Vessels, February 22, 1875.—Mr. C. WILSON asked whether Board of Trade inquiries had been held to ascertain the cause of the loss of the *Alice Bride*, *King Leopold*, *Scipio*, *Stud Brugge*, *Viceroy*, *George Batters*, *Berar*, *Kathleen Mary*, *Thornaby*, reported as missing, and supposed to have foundered with all hands in the months of October, November, and December, 1874, and January, 1875, and the reason for holding or not holding inquiries in each case. Similar information as to the following steamers *La Plata*, *Clifton*, *Precursor*, *Violet*, *Alpha*, *Emma Darid*, *Cortes*, abandoned, in some cases with loss of life, during the same period ; and whether the Board proposed to compensate Captain Robson, of the steamer *Alpha*, for the injury done to him by cancelling his certificate, which had since been returned to him, for twelve months.—Sir C. ADDERLEY replied that the ten first-named ships are all reported by the owners as missing. In the absence of evidence it is impossible to inquire. The loss of the *Viceroy*, at the request of the Secretary to the "Hull Plimsoll Committee," was inquired about. The inquiry showed that on the *Viceroy's* starting there was no appearance of overlading or improper lading, or of unseaworthiness of any kind. Mr. Travis, the magistrate before whom the inquiry was made, expressed deep regret that so much valuable time had been wasted by calling witnesses, who, practically, had been of no use whatever, and said that his regret was increased by his opinion, and that of the assessors, that the liberality of the Board in granting unusual facilities for the production of evidence had been abused in a manner utterly indefensible. The *George Batters* was surveyed before she went to sea and was pronounced seaworthy. If

reported otherwise the Board of Trade would have instituted an inquiry about her. Of the second list of seven steamers, six were inquired about. The seventh, the *Emma David*, was a foreigner, lost out of British jurisdiction. Captain Robson, of the *Alpha*, was condemned by the Court with nautical assessors present, for want of seamanship; but the Board of Trade on review, considered that, as the fault was only an error of judgment, the certificate might be restored.

Shipping Disasters, February 22, 1875.—Mr. MACIVER asked the President of the Board of Trade how many prosecutions there had been under Clause 11 of the Merchant Shipping Amendment Act of 1871, and what had been the results of such prosecutions; if he was aware that ten British steamers had foundered in the Bay of Biscay during the last six months, drowning upwards of 200 people, and how many inquiries had been held or were likely to be held in regard to these disasters; also whether, supposing any of those vessels to have been unseaworthy, it was proposed to prosecute anybody; and in such event how he proposed to reach the persons responsible for the improper condition in which vessels that had gone to the bottom with all hands, sailed from foreign ports homeward bound.—Sir C. ADDERLEY replied that there have been several prosecutions under consideration. The cases of the *Nimrod*, of Belfast, the *Mary*, of Glasgow, the *Alcedo*, of Waterford, the *Ceres*, of Whitehaven; and others are now in the hands of the Crown Lawyers. But there has been no Public prosecutor hitherto; now the Board of Trade have a solicitor. Hitherto, prosecutions have been conducted indirectly by correspondence between the Board of Trade and the Home Office, the Treasury, and the Law Officers. Of the ten steamers named, five are reported as having foundered in the Bay of Biscay, with 100 lives lost; five are missing. Inquiries have been held in the first five cases, namely:—The *La Plata*, *Cortes*, *Mary*, *Clifton*, and *Alpha*, and inquiries will be held in the other cases if any trustworthy evidence should be forthcoming. Of the first five, the *Mary* was found by the Court to have been unseaworthy, and the case is in the hands of the Lord Advocate for a criminal prosecution. As to homeward-bound ships from foreign ports, it is the Consul's business to report any suspicious cases, and he may summon a Naval Court and order survey. Owners of unseaworthy ships would be prosecuted on evidence sent home by the Consul.

Casualties at Sea, February 24, 1875.—Mr. GOURLEY asked if the attention of the President of the Board of Trade had been called to the large number of coal-laden vessels which have lately been burnt at sea, and also if his attention had been called to the frequent cases of dismasting of large iron sailing ships, and if so, whether he will state what he intends doing with a view to diminishing such casualties in future.—Sir

C. ADDERLEY replied that the Government had lately resolved to advise the issue of a Royal Commission to inquire into the causes and remedies of and for the spontaneous combustion on board of coal-laden ships, which has so much increased. There have been several cases of new large iron sailing ships being dismasted, and the subject is engaging the careful attention of shipowners, naval architects, and the register societies, who are the parties most interested and acquainted with the subject.

Measurement of Tonnage, February 24th, 1875.—Mr. PALMER asked the President of the Board of Trade, whether any legislation was proposed by Her Majesty's Government this Session with reference to the Bill on Merchant Ships (Measurement of Tonnage) in accordance with the report from the Select Committee of last year.—Sir C. ADDERLEY said no measure of the kind mentioned in the question of the hon. member was at present contemplated by Her Majesty's Government.

Foreigners in the Mercantile Marine, February 28th, 1875.—Captain BEDFORD PIM asked the President of the Board of Trade whether it was the fact that foreigners who were not naturalised as British subjects had been permitted to pass the Board of Trade examination for masters, for mates, and for engineers in the Mercantile Marine of this country upon certificates of service in foreign ships, in contravention of the Merchant Shipping Acts, which especially define the amount of service in the various grades in which the applicant must have served on board British ships before he can claim to be examined; whether it was the fact that the Board of Trade is not in a position to verify the certificates of such applicants; whether it was the fact that these certificated foreigners, owing allegiance to foreign States, are now serving as masters in command of British merchant ships, as mates in British merchant ships, and as engineers in British merchant ships, in considerable numbers; exercising authority under the Union Jack; and whether it was the fact that any of the abovenamed foreigners had been permitted to change their names and have had commissions in the Royal Naval Reserve conferred upon them.—Sir C. ADDERLEY: It is true that foreigners not naturalised, have been certificated as masters, mates, and engineers in the Mercantile Marine, and some on certificates of foreign service, chiefly Swedes and Danes. It is not true that this is in contravention of the Merchant Shipping Acts, which contain no provisions on the subject. The Board of Trade, by the Act of 1854, lay down rules for the qualification for certificated officers. The hon. member for Gravesend probably has confused this with Section 135, which provides for certificates of service completed before the Act. This service must have been passed on board a British ship. No nationality is defined either in the competency or service examination. It is not the fact that the Board of Trade is not in a position to verify certificates of foreigners who pass their examina-

tion. The regulation requires testimonials which cannot be verified by the Registrar-General to be verified by the Consul of the country or some recognised official authority. It is a fact that commissions in the Royal Naval Reserve have been granted to two officers of foreign birth. One became naturalised and changed his name; another, a Swiss, had always sailed in British ships, and his domicile was in England. Henry, Count Batthyani, is an honorary lieutenant in the Royal Naval Reserve.

Boys in Training-Ships, March 2, 1875.—In reply to Mr. JAMES CORRY, Sir C. ADDERLEY said: It is not intended to exclude from participation in the proposed apprenticeship grants from the Mercantile Marine Fund, any boys who have been sent to training-ships on the score of destitution, but only boys who have been committed by magistrates under the Reformatory and Industrial Schools Acts, which unfortunately at present confuse crime and destitution, both in law and practice. The law at present gives a preference to boys so committed over others to such an extent that they get public grants in aid of their education to the amount of 6s. a week, while boys not so committed cannot get more than 15s. a year. It is proposed that in all kinds of training-ships (except Reformatories) boys who are not committed for crime, or who come by the charity of friends, or by the desire of parents, whether from Industrial Schools or any other quarter, may, if fit for sea service, be apprenticed from the age of fourteen to sixteen, and on their apprenticeship being transferred to a merchant ship, £30 will be paid to the managers for their training, which together with the advantages offered by the Admiralty, and the usual private contributions, will cover all expenses.

Harbours of Refuge.—Replying to Sir E. WILMOT, Sir CHARLES ADDERLEY said the wreck chart now in preparation is for the last half of 1873 and first of 1874, and shows a favourable contrast for the Bristol Channel as compared with other parts of the coast. Harbours of Refuge have been suggested about the mouth of the Bristol Channel, at St. Ives, Padstow, the Mumbles, and Lundy Isle; but the casualties which occurred in the year, referred to could not have been prevented by a harbour of refuge at any one of those localities. There are places where a prior claim on Government aid in the general public interest has been laid; but local authorities in any place where a case of urgent local requirement can be made out, will receive such consideration of their own undertaking as the law enables the Government to give.

Merchant Shipping Bill.—Lord ESLINGTON asked the President of the Board of Trade, now that the Easter Recess would intervene before the second reading of the Merchant Shipping Bill, whether he would inform the House whether the Government had any intention of modifying clause 41 (the liability clause) of that Bill.—Sir C. ADDERLEY: The

Government intend to modify clause 41 of The Merchant Shipping Bill referred to by the noble lord as the Liability Clause. They propose to substitute for the provision extending the unlimited liability of a shipowner a provision preventing a shipowner from contracting himself out of his existing liability for damage caused by unseaworthiness.

The Steamship "Thornaby."—Mr. PLIMSOLL asked the President of the Board of Trade whether his attention had been called to the case of the steamship *Thornaby*, lost with all hands (twenty-nine), which sailed from Cardiff for Bombay on the 10th of December, she having a mean clear side of 2 ft. 10½ in. only, though drawing 19 ft. 10 in. forward, and 21 ft. 2 in., aft., and having on board 2,122 tons of coal and patent fuel, her net register tonnage being 957 tons, and whether he was prepared to institute a prosecution against the owners on a charge of sending a ship to sea unseaworthy by reason of her excessive overloading.—Sir C. ADDERLEY replied that the *Thornaby* is lost, probably with all hands. From the draught of water record it appears that she was very deep at starting from Cardiff, but from the length of her poop and forecastle the surveyor thought it enough to report by post and not by telegram; and the Board of Trade could only write to the owners to the effect of that report. The papers are in the hands of the solicitors for instituting inquiry. Whether a prosecution can take place or not must depend on the issue of that inquiry.—[It is of course unsatisfactory to all parties that the *Thornaby* was lost with her crew. And it would be satisfactory to all parties if these alleged cases of overloading could be cleared up on the spot and settled before the ship goes away. The popular wish is that the officers at the Board of Trade should really try "how to do it." We make the following suggestion for the consideration of our legislators and administrators. In the case of a ship suspected of being unseaworthy, let the Board of Trade officers on the spot be specially empowered, not to report to head quarters, as we understand they now do, and waste precious time, but apply at once to the stipendiary magistrate or the justices on the spot, and let them, as a court, refuse to detain her, or detain her and appoint surveyors to survey jointly with the Board of Trade surveyors and report. The responsibility of releasing or detaining (or the more frequent chance of not acting), instead of being thrown, as now, on Sir Charles Adderley and his assistants sitting in their chairs at Whitehall Gardens, would thus be thrown on the local magistrates. Public feeling and public spirit would very soon stop everything like gross overloading, if such a system as this were inaugurated in a short clause in Sir Charles Adderley's new Bill. We trust that this suggestion may catch the eye of some "independent member." Another remark we have to make is that Mr. Plimsoll is constantly mixing up register tonnage with tons weight, In the report of one of his recent speeches

he is said to have stated that the *Thornaby* was "registered to carry" 957 tons. Nothing can be more misleading and mischievous than such a statement.—ED.]

Surgeons in Passenger Ships.—In reply to Captain BEDFORD PIM, Sir C. ADDERLEY said,—Some few foreign practitioners have been appointed to British passenger ships with diplomas of their own country, as provided for suitable cases under the Passengers Act. Neither British nor foreign subjects have, to my knowledge been appointed as medical officers of passenger ships not duly authorized under the requirements of the Passengers Act, 1855, which however, are specially excepted from the Medical List Act. Either of these practitioners, British or foreign, are, therefore, authorized to sign the usual and necessary professional certificates.

SUPERHEATERS.

THE report of the Court of Inquiry held at Liverpool into the circumstances attending the explosion on board the steamship *Winsloe*, is very instructive. It may be interesting to your readers to know that the effect of heat upon the tensile strength of iron was made the subject of careful experiment many years ago by a Commission of the Franklin Institute. They found, contrary to expectation, that iron increased in strength up to a temperature of about 570°, after which its strength gradually diminished as the temperature was raised. They also found that when iron was overheated its tensile strength was greatly and permanently diminished, and similar results have been obtained in the recent experiments of Mr. Grey, in the case of the steamship *Winsloe*.

Engineers have long known that these conclusions were verified in their practice, and have accordingly found it necessary to watch carefully all dry iron plates exposed to the direct action of flame whether in superheaters or in the uptakes of chimneys.

As regards the danger with superheaters, much depends on the construction and proportion of the boiler, and the nature of the coal used. If the heating surface be small in proportion to the grate surface, an undue amount of heat will pass through the boiler tubes without being absorbed, and the temperature in the root of the chimney, and consequently in the superheater will be excessive. The remedy for this is to reduce the area of grate surface; but in ordinary well-proportioned

boilers, the temperature in the chimney does not much exceed 600° , which ought not to impair the tenacity of the iron.

Where flaming coal is used, however, there is a liability to the ignition of the gases in the smoke box, and the consequent development of great heat close to the superheater, and the same thing has sometimes occurred through the sudden ignition of soot which had accumulated at the back of the furnace-bridge. The remedy for this consists in promoting the combustion of the gases in the fire-box by the admission of air through the furnace-door or at the bridges, whereby the fire-box becomes a combustion-chamber, and the flame, in passing through the boiler tubes, gives out its heat before reaching the superheater.

A good form of superheater appears to be that of a cylindrical annulus, or that of a cylinder with hemispherical ends, placed vertically in the root of the chimney to form the steam chest. The latter form does not depend upon stays for its strength, and it can be easily cleaned and inspected; it does not present any great surface to the flame, and from the convexity of the surface against which the flame strikes the current will divide itself in such a way as to render the impact less violent. The capacity of this form of superheater being small the steam will pass more quickly through it, and fresh volumes of steam being thus brought in contact with the surface of the superheater, the abstraction of heat from the iron will be more rapid in consequence. In superheaters of this description the amount of superheating is only about enough to enable the steam to be delivered in the valve casing at the temperature due to saturated steam of the ordinary pressure in the boiler.

The conclusions to which the foregoing remarks lead, are that while superheaters require careful attention, there need be no apprehensions regarding their use, provided proper precautions are observed:—The furnace bridges provided with air apertures to promote combustion in the fire box, when bituminous or flaming coal is used; the back of the bridge filled up to prevent the accumulation of soot; the grate-surface bearing a moderate proportion to the tube-surface so that the temperature in the chimney may not be more than about 600° ; and the superheater a cylindrical annulus, or a cylinder with hemispherical ends, placed vertically in the root of the chimney.

JAMES CURRIE.

Leith, 22nd March, 1875.

THE HAMBURG NAUTICAL SOCIETY AND THE TRAINING-SHIP QUESTION.

THE above Society again occupied itself on the 27th January with the question of training-ships, which, as already reported, was referred back to the Commission, in order to be considered in connection with the conclusion arrived at by the Societies of Bremen and Kiel. The Commission which was intrusted with this business, consisting of a number of competent judges, and whose conclusions, arrived at after many sittings and thorough investigation of the subject, were adopted in full by the Society, to the effect that training-ships are not recommendable if they are intended as a means of meeting the demand for seamen. A lack of workmen in a trade is caused either when there is a general dearth of men, as in times of war, or when workmen can obtain a higher rate of remuneration in other occupations, or finally, when for a long period of time the duty of taking apprentices is neglected. In the case of a general dearth of men the few which the training-ships would be able to supply would in no way meet the requirements. In that of the seamen obtaining a higher rate of remuneration in other employments, this would equally affect those educated aboard training-ships, who would repair to those employments offering a higher rate of remuneration, like those not thus educated. Finally, if no apprentices are taken, this is a proof either that the learning of the profession is not a profitable one, and then none should be compelled to follow such an occupation, or it has been held by those pursuing this calling unnecessary to take apprentices, in which case the duty of supplying the deficiency thus created should be left to them. It is a well-known fact, that many shipowners, even twenty years ago, received youths aboard their ships only under pressure, or in consideration of high premiums, and in this manner have themselves contributed to the present state of things; it is also well known that many shipowners employ shore hands for the work of unloading, loading, rigging, and unrigging their ships instead of their seamen on account of their working cheaper, the shore hands being able to work cheaper through farming the work. It is the shipowners again, consequently, who withdraw seamen from sea service. If, then, they thus have themselves brought about the present state of things, they must bear the consequence themselves, and cannot expect to be assisted by training-ships at the public cost.

The Commission hold that the institution of training-ships at the public expense is not to be recommended for the following reasons:—Firstly, the money thus invested would fail in its object; secondly, other pro-

fessions, such as farming, would have a right to demand a similar intervention of Government to supply them with cheaper labour, since agriculture is of equal importance to a country as navigation. Only for the defence of the country in the time of war would it be justifiable for the Government to institute and maintain such training-ships. Through the introduction of steam, and the discontinuance of the use of sailing ships, and the simplification of tackle, fewer seamen as sailors are required; and these latter are not supplied by training-ships which be stationary at anchor in port.

The training-ships maintained at the cost of the shipowners also the Commission would not recommend. The shipowner has the right to demand freedom of action for himself; he will know best, whether it will be more advantageous for his business to spend his money for training-ships, or to discipline the men required aboard his own ships. Should, however, the shipowner be compelled himself to care for the supply of seamen, this can better be brought about by the enforcement of the obligation to take aboard one or more boys as apprentices according to the size of the ship, than by the creation of training-ships partially or wholly at the public cost. In any case the shipowner should be left at liberty to choose the method appearing to him the most advantageous. But the Commission believes in this case it is best to leave the present dearth of men to the action of free competition to adjust. Whatever action the shipowners may take, the Nautical Society, holding these convictions, cannot for themselves promise any co-operation, since it cannot but be foreseen that such monies will inevitably be lost. The want of seamen will, however, correct itself as soon as better relations are established between capital and labour, either by the period of service of sailors being assimilated more to that of shore occupation, or by shipowners taking means to ensure a larger supply of recruits. Training-ships, to give boys familiarity with a ship, and to enlarge their capacity of avoiding corporal injury and the danger of falling overboard, are much to be recommended; but every practical seaman will agree that the actual advantage acquired is small if the seaman under whom the boy will afterwards work is not a cautious man, and shields him against dangers to which his inexperience makes him liable. Training-ships as orphanages or educational establishments cannot be recommended from the fact that no one is justified in educating a boy for a profession, least of all an orphan, without reference to his inclinations, or physical or mental capacities; if, however, a general, not a special, education be imparted in the training-ships, the roomy, airy rooms of an orphanage are more adapted to youth than the narrow space aboard training-ships. Training-ships, again, as reformatories are not recommendable, as the congregating of a number of neglected, naturally vicious boys will but tend to a general depreciation

of character; while the introduction of the dregs of the population into the room cannot be too highly deprecated. Training-ships considered as parts of preparatory institutions, so-called seamen's training-ships, whose object is to train boys for the higher sea service, not merely sailors, is, on the contrary, to be recommended, for it is not to be denied that the present custom of only taking the sailors on board when the ship is loaded and ready to leave, and discharging them immediately on its arrival in the port of destination, must continually tend to deteriorate the education of sailors, while the practical education of seamen is of as much value as that acquired in technical navigation schools. And here, again, it is the shipowners who will profit most by these schools, and who, consequently, are bound to take the initiative in their maintenance; though Government has an interest in seeing that the lives of their seafaring population are only entrusted to capable men, and therefore, perhaps, may be expected to foster such an institution either by the gift of a piece of ground or of a ship.

THE FISHERIES OF CANADA.

THE importance of pisciculture, as a new branch of industry, seems to be thoroughly appreciated both as a means of producing cheap and wholesome food, as well as a source of general wealth to the inhabitants of the Dominion of Canada. The report made by Mr. Wilmot to the Minister of Marine and Fisheries upon this subject is deserving of attention. In the Old and the New World, we may see that various Governments have selected scientific and practical men who are capable of utilizing the vast areas of water which cover three-fourths of the earth's surface, so that *Aquaculture* may, in course of time, become the successful rival of its sister art *Agriculture*.

The introducing and acclimatising of many of the better and scarcer kinds of fish, from one country to another, has been accomplished through the means of this new agent. It is now an undoubted fact that some of the kinds of fish that were transported, in the egg state, from Scotland to Australia and New Zealand, are found to be acclimatised to the waters of the Southern hemisphere, where they were hitherto wholly unknown. In a similar manner fish fry and eggs from the waters of the Atlantic coast have been successfully carried by the overland route across the American continent, and planted in those of the Pacific, of which they were not previously natives. In Canada, certain hitherto

unknown British fishes have been introduced. These few efforts, successful in their application, are only the forerunners of what will yet be largely brought about through the study of practical fish culture. And no doubt when the science is still more generally diffused, and a practical application of it made by the people, importation and exportation of the more valuable kinds of fish will form a traffic between countries whose needs may require an improvement in that branch of commerce. France has always taken a very great interest in the artificial production of fish, as an easy means of producing cheap food for the people. The immense grounds which were laid out, and buildings which were erected in the province of Alsace, having been ceded to Prussia, another fish-breeding establishment has been founded upon more improved and extended methods for the artificial propagation of all kinds of fish. In the United States, the hearty and zealous manner in which many of the local governments have entered into the work has given a strong impetus to fish-culture. Not only have large grants been made by individual States to aid their Fishery Commissioners in re-stocking and replenishing depleted waters, but, during last year, the Federal Government at Washington made a liberal grant to assist in what has been considered a great national work.

In no country, we are informed, has fish-culture made greater progress than in the Dominion of Canada. From its first inception at Newcastle, Ontario, it has made rapid strides throughout America. Its operations there have ensured the artificial propagation of the more important commercial fishes of the country, and at the present time, there have been no less than four salmon-breeding establishments founded in Canada, three of which are in practical operation, and the fourth under process of construction—viz., the Newcastle establishment in Ontario, that in the Miramichi River in New Brunswick, and the other on the Restigouche in Quebec. The unfinished one is situate at Gaspé Basin. Applications have been made also from other parts of the Dominion for the erection of similar establishments, and several localities have been visited with a view of carrying out these demands, and no doubt, so soon as the necessary means can be obtained, and circumstances will permit, the work of construction will be commenced. As fish-culture has now become both a popular and successful industry in Canada, it is of importance that the work should be vigorously carried on. The once-famous Saguenay river very much reduced in its supply of salmon, and the river of St. John in New Brunswick, with its innumerable tributaries, both demand early attention, in order to prevent the final extermination of an article of food, which it is now almost impossible to sustain in the natural way alone. A judicious application of the artificial system, together with thorough protection during the close seasons would, it is believed, soon reproduce

in those rivers, a large supply of fish both for domestic purposes and foreign trade. Frequent accounts also have been received by the Fisheries Department from the Provinces of Nova Scotia and Prince Edward Island, of the falling off of the former abundant supplies in the rivers there; it may not therefore be improbable that means will have to be speedily taken to increase and multiply that article of commerce in those Provinces, and that a systematic process, both by the natural and artificial methods of propagating fish, will have to be resorted to.

The science of pisciculture has been carried on only a short time in the Dominion, and is, therefore, to a certain extent, a new subject, and will likewise require a considerable amount of detail to explain its workings. In contrasting the artificial with the natural method, the superiority of the former over the latter system will be easily understood even by the great mass of the people, who are, as yet, wholly uninformed as to the novel methods just inaugurated. It has been advanced by many naturalists of an early period, and upheld by eminent writers of modern times, that not more than 1 per cent. of the ova laid in the natural way ever produce a living fish. But at the present day it is possible, by artificial propagation, to rear from eighty to ninety living fish from every hundred eggs, which large increase is greatly needed for re-stocking the waters of the country with fish of such various kinds as may be required in different places, and for supplying in part the increasing demand in the markets of the country, for fish food. Perhaps in no part of the globe can there be found so wide a field for successfully carrying on this new industry of propagating fish, both by natural and artificial means, as in the Dominion of Canada. The limpid water of its many large rivers and multitude of smaller streams, its immense inland seas of pure fresh water, and the numerous inlets and bays to be found everywhere along its extensive maritime coast, are sources for yielding wealth that cannot be surpassed, and now that the people and the Government are becoming more alive to the great benefits which are to be obtained from the inland and coast fisheries of the Dominion, every effort should be put forth by those in power, not only to sustain, but also to increase and multiply the product of those extensive nurseries, by a vigorous application of such means as will best conduce to the growth and expansion of the piscine wealth of Canada.

BOOKS RECEIVED.

Ocean Waves. By Captain Charles Chapman. London : Berridge & Co., 37, East Cheap. 1875.

THIS book, being the work of a practical sailor, is well worth reading. The style is easy, and the end is practical. The writer is in favour of long ships, and observes, that "all the nonsense about a ship being too long, must now be dispelled from the mind of every old sailor." It is difficult to reconcile these practical remarks of Captain Chapman with the sillinesses that were uttered at the recent meetings of the Society of Arts, on a trades' union paper read and advocated there by Captain Bedford Pim, R.N., M.P. "Ocean Waves," besides describing the behaviour of ships, has a good deal to say on other interesting topics, and contains a very marked tribute to Mr. William Inman, as being "the first to send the poor emigrant across the Atlantic at a cheap rate by steamers."

The Law concerning the Registration of Births and Deaths in England and Wales and at Sea. By Arthur John Flaxman, Barrister-at-Law. London : Stevens and Haynes. 1875.

THE provisions of the Act of the last session of Parliament relating to the registration of births and deaths cannot be too widely known, and we have, therefore, great pleasure in bringing to the notice of our readers Mr. Flaxman's comprehensive treatise on the subject. This publication is a compilation of the whole of the statute law of registrations, and cannot fail to be of great service to the general public, as well as to all who are more immediately connected with the carrying out of the Acts. We would especially recommend it to the notice of masters of passenger ships, who should take the earliest opportunity of making themselves acquainted with the new enactments as regards the registration of births and deaths on board ship. The subject is dealt with as concisely and clearly as it is possible to deal with such a matter; every section of the various Acts being supplemented by Mr. Flaxman's notes and explanations, and where necessary, forms in which it may be found convenient to record and report the requisite particulars are given. The same remarks apply to the general public, and all who ever expect to have the happiness of becoming heads of families will derive much useful information as to their legal obligations from the book. To the legal profession and to registrars of births and deaths it must prove invaluable. An exhaustive index is appended, the type is clear and readable, and the work is, in all respects, admirably got up.

The Fisheries and Fishmarkets of Great Britain. By Henry Dempster, advocate for Fishmarket Reform for thirty-four years.

THIS little pamphlet is well written. The author appears to have set himself a mission, which is to introduce into the Fisheries of Great Britain a superior and larger sort of fishing-smack, having a well in which fish could be kept alive. Mr. Dempster seems to be fairly well posted in his subject. His scheme, as stated in his own pamphlet, is as follows:—"I can quite readily believe that fish that have lain for two or three days in ice are wholesome enough and fit for food; but when they are kept *two and three weeks* among ice before being sent to market, the chances then are that all flavour has gone out of the fish, and they are dry and tasteless. Hand-line fishing, and *welled vessels* to keep fish alive in, is the most perfect system to supply the markets at all times with fresh *white fish*; but as that is a slow process of capture compared with the trawl net, this instrument of warfare against the finny tribe is now chiefly adopted by English fishermen. The only plan that I can suggest for trawlers to improve upon their present mode of fishing is to have large *welled* vessels instead of dry-bottomed ones: and instead of dragging their trawl-nets four or five hours over the ground before heaving them up (the most of the fish in the net then being dead), they ought to heave up their net *every hour*, as then many of the fish would be alive; these they could put in the vessel's well, where they would live until brought into the market. This argument I have combated with fishermen along the east coast of England, where trawl-fishing is mostly adopted. The reasonable and unprejudiced among them believed in my views; but then they said, 'If we were to undertake to heave up our trawl-nets *every hour*, we would require double the number of men we now employ as a crew.'" As regards the Tyne, Mr. Dempster says, "Since the improvements have been effected at the entrance of the River Tyne, by extending piers on each side, dredging and deepening the bar, large-sized fishing-vessels may venture to cross the bar with safety at the very lowest tides. North Shields wholesale fish-market possesses another advantage: the water is salt there, so that living fish taken to it in welled vessels would continue to live until wanted for sale. Were it not for the number of Scotch fishing-boats that proceed there during the herring fishing season, North Shields wholesale fish-market, which cost so much money to erect, would be nearly a market to *let*. Such a circumstance is worthy of consideration, particularly as the River Tyne is not far distant from good fishing-grounds, and the river is not now dangerous to run for even in the most stormy weather. What is now wanted to make North Shields wholesale fish-market a fishing-station worthy of the River Tyne, is a few dozen large-sized decked and welled fishing-vessels—craft capable of buffeting about at sea in all weathers,

and manned with brave hardy fishermen, who are acquainted both with the system of trawl-net and hand-line fishing, such as the men at Grimsby, Hull, Yarmouth, and Lowestoft. Surely, at such a place as the River Tyne—famous all the world over for being a seaport that sends vessels abroad to be nurseries for training up youth to be active able seamen—the task of erecting North Shields wholesale fish-market into a first-class station for prime living fish, ought not to be one of very great difficulty, particularly if some able men will put their hands to the oar, and an experienced coxswain take hold of the tiller, and steer the question onward in a right direction.” We wish Mr. Dempster every success in his endeavour to improve the fish-markets of Great Britain; but we much doubt whether the extra lost time and labour involved in his welled fishing-smack scheme, will ever be accepted by men who have to make their living by fishing.

Training-ships for the Merchant Service.

A PARLIAMENTARY Return, number 11 of the Session, has been circulated, which shows, by an admirable analysis at the end, that there are at present in existence seventeen training-ships for young mercantile “Jacks.” Two of these ships are for officers, eight are Industrial Schools, four are independent ships, and three are prisons. These ships last year sent 1,306 boys into the merchant service: they have on board now 3,754 boys, but there is room in them for more—viz., in the officers’ ships there is room for 37 more; in the Industrial School-ship for 249 more; in the independent ships for 152 more; and in the prison-ships for 63 more. The cost per head per boy per annum in the officers’ ships is £53 15s.; in the Industrial School-ships, £18 19s. 7½d.; in the independent ships, £21 6s. 2d.; and in the prisons, £20 7s. 8d. It is very sad from this return to see how the State handicaps respectable boys in favour of the prison and Industrial School classes, for we find that £12,861 has been paid to teach convicted boys to become sailors, and £38,246 for the training of neglected consigned children of the Industrial School class. It is really time that some grant was made to assist in training boys who are neither convicted nor consigned. In making this last observation we do not wish to cast any slur on the Industrial School boys, for they would, if they were not kept so long on board, and if they were not sent so young, make very good sailors, and they turn out often to be good, steady lads. But there is really little, if any, attempt to send suitable boys to these Industrial School-ships, and this very element of suitability, as regards age, size, strength and inclination, being absent, the present scheme is not satisfactory. If the scheme of the President of the Board of Trade is adopted (see our remarks at clause 33 of the Bill, pages 208 and 209 of

March number), it will not be necessary for a boy to graduate in the gutter in order to secure assistance towards learning the practical duties of a sailor.

Annual Report of the Lighthouse Board of the United States to the Secretary of the Treasury for the fiscal year, ending June 30th, 1874.
Washington : Government Printing Office. 1874.

THE vast extent of the seaboard of the United States, together with the coast line of their inland waters, and the increasing trade of the country, necessitate a good deal of attention on the part of the American authorities to coast marking arrangements. We learn from the report now before us that around their shores there are at present 654 lighthouses and light-ships, 40 fog-signals, about 350 un-lighted beacons, and 2,865 buoys in position. To set up lamps of welcome and guiding marks about the shores of a country is to hang out signals of friendliness to all comers, and to reach out helping hands to enable them to come safely through the dangerous waters which fringe the coasts. All such aids to navigation are creditable to the nation which has them set up, and this report shows plainly enough that the United States Government is doing its best in this respect. As an appendix to the report concerning lighthouses, &c., there is a somewhat lengthy paper on fog-signals, by Professor Henry, but we regret very much the tone of many of the remarks. It seems as though there existed some sort of jealous feeling in the mind of the Professor in regard to the recent investigations on fog-signals carried out in England under the auspices of Dr. Tyndall and the Trinity Board. He seems to insist that nothing was discovered by these investigations which had not previously been found out in America, and his tone seems to be that of an aggrieved individual, because the subject has been dealt with so thoroughly in this country while their doings in the United States have not created so much stir. This feeling is hardly worth noticing ; it matters little who has the honour and glory so long as effective signals are established, but when one finds the Professor saying in another place that a lighthouse "is a life-preserving establishment founded on the principles of Christian benevolence" we cannot help thinking it would have been more in accordance with such an expression if the Professor had avoided all show of unpleasant feeling and not gone out of his way to claim for his Board and himself the trifling credit of having been the first to do this or that in regard to fog-signals.

CORRESPONDENCE.

THE SEAL BUTCHERIES.

(NEWFOUNDLAND'S STORY.)

To the Editor of the "Nautical Magazine."

DEAR SIR,—I have read with considerable interest your humane and eminently suggestive paper on the above subject in the current number of the *Nautical Magazine*, and heartily hope that the initiative so wisely and properly taken by our Scotch friends at Dundee may be followed up similarly not only by our own Parliament, but also by Sweden, Norway, and other countries participating in these valuable privileges, and who must see the advantage of joining in this much-needed work of reform as a means of recuperating the seal fisheries at Jan Mayen, where the "butcheries" complained of in Mr. Buckland's letter, and especially referred to in your article, have occurred. Your suggestion of a "year of grace" or period when no seal fishing shall take place strikes me as especially pertinent and proper. But it is to the last paragraph in your notice that I would draw your own and readers' attention. I have a few words to say about the seals from which the ladies' "dear" seal-skin jackets *do* come, and something, too, by way of supplement to their sorrows, which, if it fail to adorn the tale, I trust it may at least be found to point the moral of the seal's sad story. Whether the Americans and Russians kill the seals in a more kindly manner than the Scotch and Norwegians I leave you to judge when you have read what follows.

I happened to visit St. John's, Newfoundland, early in 1873, and while there, I had a favourable opportunity of learning many details connected with the capture of the seals in those prolific seas. The importance of this branch of industry may be estimated by the fact that it gives employment to nearly forty steam and sailing vessels, manned by 10,000 men—the flower of the male population of the island—and yields an average revenue of £200,000 annually. Formerly, the day of departure for the sealing fleet was the 1st of March, but by a recent Act of the Newfoundland Legislature, it has been postponed for sailing vessels till the 5th, and for steamers till the 10th of that month. When I reached St. John's these steamers were all dropping in from the seal regions, laden with oleaginous spoil, and each with a barrel lashed to the mast as a look-out. It is said to be a rare thing for a "sealer" to change a single article of clothing while on a cruise, and certainly the appearance of the men I saw fully justified the assertion. They were black as colliers and as greasy as pork butchers. Their clothes and faces shone like the skins of negroes on a hot day, but their smell prevented anything like a nearer approach

to details. The outfit of a Newfoundland seal hunter is very much the same as that of his British or Norwegian brother professor, possibly a little "more so." Each man is armed with a "gaff" or club with a hook in it, a scalping-knife and a "towing-line," while a few of the older hands and the best shots carry rifles. As soon as the seals are espied, the steamer is brought into such a position as will enable the men to approach them either by landing on the ice and jumping from pan to pan, if the "floe" is not solid, or by "punts" if they are not accessible in any other way. Once alongside the object of their cruise, the work of slaughter commences. The sea is covered with "white-coats"—young seals not yet six weeks old—and their mothers, whose grey-furs in the case of "harps" are distinguished by a large black mark in the shape of a harp; "dog-hoods"—male seals, so-called from a hood which they can inflate so as to protect their heads when attacked; "bed-lamers," or one year old males, on whom the harp has not yet appeared; "blue-backs or young-hoods," and other varieties, each with its special appellation. One would think that out of the superabundance which nature has so lavishly bestowed, only those seals which are of sufficient commercial value to repay the labour and time expended in their capture would be slaughtered, but—

Alas! for the vanity

Of Christian charity

Under the sun,

even the poor seal finds no mercy. The havoc which a couple of hundred men plying their implements of destruction in the midst of these vast congregations of helpless victims in a few hours may readily be pictured. A blow on the nose is followed by a cut, which may be said to be the "unkindest cut of all," as it completely separates the skin or "pelt" from the carcase, which is left quivering and gory on the ice. To one not rendered callous by long experience the whole process is most sickening. The moans of the young seals; the agonies of the mothers at seeing them slaughtered; the fierce battle sometimes waged by the old dog-hoods, who often make such sturdy resistance that they require two men alternately striking with their gaffs to dispatch them; the whole strewn with the skinned carcasses, still preserving their original shape, and almost quivering with life, present a scene which nothing but the stimulus of large gains and quick returns would harden men to. Seal-hunters, whether on the Norwegian, Alaskan, or Newfoundland coast, however, have no "bowels of compassion." The average value of each pelt is about ten shillings sterling, and the entire season's "catch" ranges from 250,000 to 600,000 seals. A third of the profits of the Newfoundland business goes to the crew, so that every man has an especial interest in making the "catch" as large as possible. Then the risks and chances

attending the pursuit are so great that the pleadings of mercy are easily stifled. Yet I found that considerations of humanity had prevailed with the local Legislature, and that in order to avoid killing the mothers while still pregnant, or before the young are old enough to live without them, the date of departure from St. John's for the seal grounds had been put off ten days—viz., from the 1st to the 10th of March, as before stated. Notwithstanding the large annual slaughter of these animals, the Newfoundland supplies show no signs of exhaustion, or even of diminution. The people of St. John's, indeed, claim that they are practically inexhaustible, and this assertion, improbable as it at first sight appears, is certainly supported by the facts. The seals are hid in Arctic solitudes beyond the reach of the hunter, and come regularly south to meet his wants without appreciably reducing their numbers. As an industry, the most painful feature in the seal traffic is the cruelty which forms so conspicuous a feature in it; but the remedy for this lies after all with the consumer, and not with those who supply the demand. As long as people burn seal oil, and wear seal-skin jackets, and "kid" boots made of seal-skins, the slaughter of the innocents will continue. But the "year of grace" suggested by you will do much to remove many of the most repulsive and debasing features of this valuable branch of industry; and should this or any similar movement for the protection of the seal fisheries be entered upon by our own Government or that of Sweden, our loyal Colony of Newfoundland will not be found behind in the work of reform.

Apologising for this somewhat lengthy trespass on your valuable space,

I am, most truly,

G. HEPPLER HALL.

Dartmouth Grove, Blackheath, Feb. 20, 1875.

OCEAN ROUTES.

FROM WESTERN INDIA OR CEYLON TO SUNDA STRAIT DURING THE S.W. MONSOON.

To the Editor of the "Nautical Magazine."

SIR,—The sailing directions by Horsburgh and Findlay upon the latter part of the above route—viz., from Long. 93° on the equator to the Strait are very short; both advise keeping some distance from the land, until near the entrance of the Strait. They also state that a drain or current will be felt setting to the northward, but by taking advantage of shifts of wind a vessel will readily make its way to the S.E.

Now, with every respect to the authors of the above works, I cannot agree with that portion of the direction that advises masters in all cases to keep some distance from the land, for I think it is a pity to be working

to windward outside the Islands against a strong trade and head sea with a drain of current against them, when, by standing on starboard tack, even if they are making a little northing and passing through Sipora Strait, or north of Engano Island, they will get less sea, and a current in their favour; and on nearing the Sumatran coast will get regular land and sea breezes to help them to the S.E.

The writer of this left Bombay in ballast, bound to Batavia, on the 2nd June, 1871, with some little anxiety with regard to the latter part of the passage. After leaving we had light airs and calms until the 6th when we got the first burst of the S.W. monsoon which put us under reefed sails and sent us on our way, just enabling us to make a lead along the west coast of India, from which date we carried a strong monsoon and crossed the equator on the 15th of June in $92\frac{1}{4}^{\circ}$ East Long.; probably we might have done better had we crossed as the directions recommend in 94° E. So far we had done well, and from this time until the 24th we experienced the regular Doldrums, the squalls varying from S.S.E. to S.W.; but owing to the scarcity of observations and the variable winds, I could not determine with any certainty the set of the current. On the above date the weather cleared up with a steady trade at S.E. by E., our position at noon being lat. $6^{\circ} 58' S.$, long. $101^{\circ} 32' E.$

During the next twenty-four hours we stood sixteen hours north-eastward and eight hours southward, the course made good by observation was N. 48° E. $66'$; acct., N. 79° E. $71'$; current, N. 38° W. $28'$; and ship's position at noon, lat. $6^{\circ} 8' S.$, long. $102^{\circ} 21' E.$

Having experienced a N.W. set during the previous twenty-four hours, I thought it better to stand longer toward the coast, and accordingly stood eighteen hours north-eastward and six hours southward, and the course and distance made good by observation was N. 79° E. $76'$; acct., was N. 74° E. $90'$; set of current, N. 50° E. $16'$; and ship's position at noon, lat. $5^{\circ} 58' S.$, long. $103^{\circ} 36' E.$

During the next twenty-four hours the wind veered a little more to the southward, and we stood nineteen hours to the E.N.E. and five hours to the southward, the course and distance made good being by observation S. 73° E. $69'$; acct., N. $88\frac{1}{2}^{\circ}$ E. $54'$; set of current, S. 36° E. $24'$; and ship's position at noon was lat. $6^{\circ} 14' S.$, long. $104^{\circ} 48' E.$, at which time verified ship's position by Latitude observed, and bearing of Lampoong Peak (Sumatra) that evening, we had a strong N.E. wind off the Sumatran land, and at midnight we were abreast of Brakatoa Island.

Now, I think the above days' works tend to show that the nearer the vessel got to the coast of Sumatra the more current was felt in her favour; if this is the case always during this season—and I have every reason to think it is so—it would be better to advise masters, after clearing the Doldrums, and getting the trade wind steady should it be well southerly,

to stand on starboard tack, and go through Sipora Strait, which is ten miles wide, and clear of dangers throughout, or anywhere north of Engano Island; as by getting within a reasonable distance of the Sumatran coast, say ten to twenty miles, they will get regular land and sea breezes six days out of the seven to help them to the S.E., with a better current in their favour. The writer of this would probably not have spoken so strongly on this subject, but having received orders in Batavia to go to Padang and load between Flat Point and Padang (inside the islands), I found a current setting to the S.E., averaging eighteen miles during the twenty-four hours. The master of a Russian vessel, who also went from Batavia to Padang about the same time, informed me that during twenty-four hours' calm which he had off Bencoolen, he drifted 94' to the south-eastward by trustworthy observations.

Later on in the season, in September, October, and part of November, there would be more necessity to stand in towards the land, for at this time the S.E. trade would be fallen in with much closer to the equator, and ships would necessarily have more southing to make than we had, for after loading in Padang we came through Sipora Strait on the 20th of August, and on the 21st and two following days we had a very strong trade, and so far southerly that upon an easy bowline we made very little better than a W.S.W. course. Now a vessel with this wind could stand on towards the islands, and thus would be nearing her port more rapidly than working to windward against strong trade and head sea.

As nearly all the vessels that make this passage are in ballast, some of them probably not over well ballasted, whenever anything is to be gained by favourable currents or winds, or by a smooth sea, it is a duty we owe to give each other the benefit of our personal experiences in the above matter.

In this spirit the writer places this in the hands of the editor (should he deem it, or any part of it, worth publishing), to give it room in the *Nautical Magazine*.

In conclusion, I would advise masters going to the Straits during this season to use a stream anchor with sixty to seventy-five fathoms of stream chain or mooring chain attached, and take in one of their bower anchors, for in the Straits they will find a tide setting to the westward sometimes as much as four knots per hour from fourteen to sixteen hours, followed by a slack water, or weak flood, of eight to ten hours, and it is a very common occurrence in light weather for a vessel to be close up to Anger at night and the next morning find herself back to Brakatoa Island. Under such circumstances the writer has anchored in thirty-two fathoms with a stream anchor and $1\frac{1}{2}$ inch chain, when if he had let go a bower anchor he would probably not have been able to lift it again.

Wallaroo, South Australia, December.

M. E.

LIGHTS ON THE COAST OF JUTLAND.

To the Editor of the "Nautical Magazine."

DEAR SIR,—The unsatisfactory state of lights on the dangerous West Coast of Jutland, has caused the "Committee of Commerce and Navigation" of this port to send a special paper to the Swedish Government, begging it to consider what ought to be done.

As, however, all nations are more or less interested in the quick improvement of the light system on the coast of Jutland, I herewith enclose a translation of the said paper, in case you may consider it proper to make it more generally known by publishing it in your valuable Magazine.

I am, Sir, your most obedient servant,

TING V. SYDOW,

Lloyd's Agent.

Stockholm, 6th March, 1875.

"DREAD AND MOST GRACIOUS SOVEREIGN!

"Knowing what gracious care Your Majesty has always shown our maritime affairs, we most humbly venture to call your Majesty's attention to a case, which is certainly exceptional in our days, but which seriously and grievously endangers navigation, when it does occur.

"As far as history dates back, the West Coast of Jutland has been a terror to the sailor crossing the North Sea. Innumerable wrecks have occurred on this coast year by year, and though we have no official reports of the number and state of the casualties which have befallen, we seem to need no other evidence but that nineteen stations for lifeboats have been erected from time to time. This is a greater number, as far as we know, than exists on any other coast of the same length.

"A glance at the chart will show clearly that every vessel, from the Channel to the South Coast of Norway, West Coast of Sweden and the Baltic, is in danger of being wrecked on the Coast of Jutland through the slightest mistake in the shaping of the course. The increased navigation from Hamburg, Bremen, Amsterdam and Antwerp to the Baltic has also increased the number of casualties. To avoid this overhanging danger, all these vessels and steamers must take a long roundabout in the North Sea, and even this precaution does not always keep, for innumerable streams and drifts can bring the most experienced sailor out of his reckoning.

"The Danish Amiral Zahrtman, whose valuable book, 'Den Danske Løds,' was found so excellent, that it was published in England, by order of the British Admiralty, states: 'The coast between the Seav or Skagen and Blaavand Point, is iron-bound, without harbours or refuges,

and consequently should be avoided with all winds not blowing off shore.'

"With regard to large vessels the coast between Haurtholmens and Blaavand Point is as repulsive as the former, and even more so, on account of the fatally renowned Horn Reefs, one of the most extensive and dangerous groups existing.

"We have made enquiries at the Royal Hydrographical Office here, and have received the following information from the Chief: 'On the coast, ninety-eight minutes or nautical miles long, between Haurtholmens lighthouse and Blaavand Point, whence the dangerous Horn Reefs stretch more than sixteen minutes W.N.W. towards the North Sea, no light-house exists, only a lantern on the pilot cutter at the inlet to the channel at Thyrløø. The above-mentioned Horn Reefs have no lightship, but nineteen stations for lifeboats exist at present along the coast.'

"From the above it seems proved that the coast described presents very great perils, and that it has caused, and still causes, great losses to navigation. We willingly and gratefully acknowledge that a considerable number of stations for lifeboats have been established, but no arrangements for *preventing* shipwrecks exist. Ninety-eight nautical miles of coast between two lighthouses so low that land can only be seen at a short distance from the deck of a vessel, and when it is too late to escape, is happily a unique phenomenon along the highways of the seas. It may be remarked that difficulties arise in laying out suitable lightships at Horn Reefs; but technical difficulties can now-a-days generally be overcome. As an example, we beg to remind that when the question of obtaining a lightship at the dangerous Finngrundten was first started, the answer was that no ship could be moored there. It is, however, now sixteen years since a lightship was first placed there, which shows that it has been able to remain there, and it has certainly been of great advantage.

"The Committee of Commerce and Navigation therefore request, with the profoundest submission, that your Majesty would graciously consider which means may seem best to prevent the enormous losses of life and property in future which so seriously injure the navigation of all nations, through the untimely condition of the lights on the West Coast of Jutland.

"We enclose a copy of the statement of the Superintendent of the Royal Hydrographical Office.

"A. O. WALLENBERG.

"Chairman of the Committee of Commerce and Navigation.

"December, 1874, Stockholm."

APPORTIONMENT OF SALVAGE.

To the Editor of the "Nautical Magazine."

SIR,—Will you kindly give me the best information you can in your April number of the *Nautical Magazine* as regards salvage; how it is distributed generally? I believe there is no law; but will you tell us what is the common practice—what is generally taken by the owners of the ship rendering the assistance, and what portion goes to the crew of the ship, commencing with the master? By so doing, you will greatly oblige

MASTER MARINER,

And Subscriber to your valuable Magazine.

Waterford, March 8, 1875.

[There is no fixed rule in the Court of Admiralty as to the apportionment of salvage. It varies according to the circumstances of each case. The master and officers of a salving vessel are generally held to be entitled to a larger share of salvage than any of the crew, and the salvage allotted to the crew is usually divided amongst them according to their respective ratings; apprentices being entitled to share with the crew, though in a smaller degree. In the case of the *Martin Luther* (Swa. 290), £900 was allotted to be divided amongst the master and crew, of which £400 was given to the master. In the case of the *True Blue* (L. R. 1 P. C., 259) £5 was allotted amongst master and crew, of which sum the master received £200. In cases of derelict, one-half of the salvage is commonly awarded to the owner of the salving vessel, from one-fourth to one-eighth to the master, and the remainder amongst the crew, in proportion to their wages. The *Perla* (Swa. 232). See also instructions issued by the Board of Trade, 1865, Art. 97 (d).—ED.]

KARA SEA.—We learn that the indefatigable Captain Wiggins, of Sunderland, intends making another voyage to the Kara Sea in the ensuing summer, for the purpose of extending the investigations commenced by him last year. This gentleman, we think, deserves encouragement, and therefore we are glad to see that in his own town of Sunderland there is a likelihood of his being assisted in his undertaking by public subscription. He is not a wealthy man, but freely gives his time, his knowledge, and his energy to a work which is of great public utility. Government expeditions are all very well, but individual enterprise is of the greatest importance nevertheless, and must not be disregarded altogether. I trust Captain Wiggins may find many friends both in and out of Sunderland who will help him in making further exploration, and establishing the practicability of communication with the Kara Sea and Obi River, in order to bring the products of those almost unknown localities into the markets of the civilized world.

SHIPBUILDING, 1875.

SAILING SHIPS.

	No. of Ships January and February.	No. of Ships correspond- ing months last year.	Gross Tonnage January and February.	Gross Tonnage corresponding months last year.
Aberdeen ...	1	8	818	2,071
Barrow ...	2	—	1,640	—
Belfast ...	—	1	—	1,878
Bristol ...	—	8	—	449
Cowes ...	8	2	310	90
Dartmouth ...	7	4	578	196
Dundee ...	2	2	1,900	914
Faversham ...	1	2	39	76
Glasgow ...	8	2	8,480	1,830
Greenock ...	2	—	2,993	—
Hull ...	8	1	221	67
Jersey ...	2	1	150	52
Liverpool ...	8	7	8,893	3,485
London ...	1	7	59	700
Middlesbro' ...	1	1	182	1,467
Newcastle ...	1	2	370	419
Plymouth ...	1	2	189	148
Port Glasgow ...	4	2	4,094	1,890
Portsmouth ...	1	4	108	540
Rochester... ..	2	1	95	41
Southampton ...	1	1	265	47
Stockton ...	1	—	1,472	—
Sunderland ...	6	7	5,937	7,380
Whitehaven ...	1	1	1,312	1,249
Yarmouth ...	1	2	28	74
Other Ports ...	28	25	8,087	2,415
Total	78	83	37,715	27,478

SHIPBUILDING, 1875.

STEAMSHIPS.

	No. of Ships January and February.	No. of Ships correspond- ing months last year.	Gross Tonnage January and February.	Gross Tonnage corresponding months last year.
Glasgow ...	16	11	19,416	15,505
Greenock ...	4	1	7,292	1,941
Port Glasgow	4	4	2,938	3,001
Sunderland	3	5	4,672	7,019
Newcastle...	6	5	7,316	5,661
North Shields	4	6	3,080	2,621
South Shields	2	1	626	110
Liverpool ...	1	9	1,113	6,073
Dundee ...	—	1	—	689
Hartlepool	4	—	4,194	—
Aberdeen ...	1	2	632	1,105
London ...	1	—	278	—
Stockton ...	—	1	—	2,021
Kirkcaldy ...	—	1	—	1,160
Middlesbro'	3	3	2,631	2,844
Barrow ...	—	1	—	3,005
Whitby ...	2	—	2,015	—
Other Ports	2	4	795	282
Total	53	55	56,943	53,037

THE ROADSTEADS OF HAWKE'S BAY AND POVERTY BAY (N.Z.).—*Excelsior* writes that Port Ahuriri, Hawke's Bay, is a much safer roadstead than he was led to expect, and he has no hesitation in saying that with good ground tackle, a ship could ride out in safety the severest gale. Poverty Bay is sheltered from all winds except the S.E., there is a good depth of water at the anchorage, and the holding ground being stiff clay there is no fear of a ship dragging. From strong south-easters, which are rare in summer, a ship loading in the bay could find shelter under Young Nick's Head.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
87	NORTH SEA—Schelde River	Alteration in Lights.
88	AUSTRALIA—Victoria—Warrnambool	Alteration in Lower Light.
89	AUSTRALIA—Victoria—Port Phillip—West Channel Light-vessel	Alteration in Lights.
90	UNITED STATES—California—Montara Point	Establishment of a Fog-Signal.
91	NORTH SEA—North Hinder Light-vessel	Establishment of a Riding Light.
92	MEDITERRANEAN—Egypt—Port Said	Alteration in Lights at Entrance.
93	NEWFOUNDLAND—South Coast—Fortune Bay—Garnish	Establishment of a Light.
94	NEWFOUNDLAND—Port Basque—Channel Head	Establishment of a Light.
95	CHINA—East Coast—Breaker Point	Reported Danger off.
96	CHINA—East Coast—Middle Dog Island	Discontinuance of Beacon.
97	WEST INDIES—Jamaica—Port Royal	Alteration in Buoyage.
98	UNITED STATES—Gulf of Mexico—Atchafalaya Bay—S.W. Reef Lighthouse	Alteration in Fog-Signal.
99	CHINA—East Coast—Shantung Promontory	Exhibition of Permanent Light
100	ADRIATIC—Selve Island—Point St. Antonio	Establishment of a Light
101	ADRIATIC—Maltempo Channel—Dubno Point	Establishment of a Light.
102	ADRIATIC—Maltempo Channel—Port Selce	Establishment of Harbour Lights.
103	INDIAN OCEAN—Seychelle Islands—La Perle Reef	Position and description of.
104	BERMUDA ISLANDS—Mills Breaker	Establishment of a Buoy.
105	MEDITERRANEAN—Greece—Marathonisi	Re-exhibition of Light.
106	NORTH SEA—Jade River Entrance—Outer Light-vessel	Alteration in Danger-Signal.
107	GULF OF ST. LAWRENCE—Chaleur Bay—Miscou Island	Establishment of a Light.
108	LAKE ERIE—Cleveland Harbour	Alteration in Lights.
109	ENGLAND—South Coast—Dungeness	Intended establishment of additional Light
110	ENGLAND—South Coast—Dungeness	Intended alteration in Light.

NAUTICAL NOTICES.

87.—NORTH SEA.—*Schelde River*.—The Belgian Government has given notice of alterations having been made in the lighting of the river, by discontinuing the use of the light-vessels and establishing lights on the shore in their stead. The river is now lighted above Vlissingen (Flushing) with the following lights, viz. :—

Borsele Point.—A *fixed* light (same position as before), showing *red* when bearing southward of S.E. by E., and white when bearing eastward of S.E. by E.

Nieuwe Neuzen.—Two *fixed* white lights, on the bank of the outer dyke, bearing from each other N. by W. $\frac{1}{2}$ W., and S. by E. $\frac{1}{4}$ E., distant 330 yards; the North light 17 feet, and the South light 32 feet, above high water. Position of North light, lat. $51^{\circ} 20' 40''$ N., long. $3^{\circ} 48' 30''$ E.

Terneuse.—A *fixed* light (same position as before), showing *red* when bearing eastward of S.E. by E. $\frac{1}{2}$ E., and *white* to the southward of that bearing.

Eendragt.—Three *fixed* white lights. One of these lights is on the sea bank, and the other two a short distance behind and on either side of it. The centre light is visible from the river through an arc of 180 degrees, the East light from E. by N. $\frac{1}{4}$ N. through east and south to S. by W. $\frac{1}{4}$ W.; and the West light from E.S.E. through south to S.W. by W. $\frac{3}{4}$ W. The East light bears E. $\frac{1}{2}$ S., distant 335 yards, and the West light S.W. $\frac{3}{4}$ S., 370 yards from the centre light. The centre light is elevated 16 feet, the East light 32 feet, and the West light 34 feet above the level of high water. Position of centre light, lat. $51^{\circ} 21' 30''$ N., long. $3^{\circ} 54' 20''$ E.

N.B.—The centre and East lights in line, lead in the fairway towards Terneuse, and the centre and West lights in line lead in the fairway to the northward.

Baarland.—A *fixed* light (same position as before), shows *red* when bearing southward of S.W., and *white* when bearing westward of S.W.

Biezelingsche Ham.—A second *fixed* white light has been established at Biezelingsche Ham, bearing N. by E., distant 590 yards from the ordinary light, it is visible between the bearings of N.E. by N. and N. by W., and is 39 feet above high water.

Hanswest.—(In the same position as before), a *fixed* light, *red* when bearing south of E.S.E., and *white* when bearing east of E.S.E.

Magere Merrie.—A *fixed* white light has been established at Magere Merrie, bearing N.W. $\frac{3}{4}$ W., nearly half a mile from Welsoorde light. It is 50 feet above high water.

Groenendyk.—Two *fixed* lights, east of Groenendyk; they bear from each other E. by S. and W. by N., distant 756 yards. The East light is on the sea bank, and the other on the inner bank of the outer dyke. The East light is *white* and *red*, showing *red* from W. by S. to W. $\frac{1}{4}$ S., and *white* from W. $\frac{1}{4}$ S. to N.W. by W.; it is 17 feet above high water. The West light is *white*, and is visible from N.W. by W. $\frac{1}{4}$ W. to W. $\frac{1}{4}$ S.; it is 36 feet above high water. Position of the East light, lat. $51^{\circ} 22' 20''$ N. long. $4^{\circ} 2' 30''$ E.

Rilland.—Two *fixed* lights bearing from each other N.N.W. $\frac{1}{2}$ W., and S.S.E. $\frac{1}{2}$ E., distant 220 yards. The North light is *white*, elevated 27 feet above high water. The south light shows *red* when bearing east-

ward of North, and *white* when bearing westward of North ; it is elevated 14 feet above high water. Position of the North light, lat. $51^{\circ} 24' 30''$ N., long. $4^{\circ} 11' 30''$ E.

Bath.—Two fixed lights bearing from each other N.E. by E. $\frac{1}{4}$ E., and S.W. by W. $\frac{1}{4}$ W. The East light is white, elevated 30 feet above high water. The West light shows *red* when bearing eastward of N.E. by N., and white when bearing northward of N.E. by N. ; it is elevated 23 feet above high water. Position of the East light, lat. $51^{\circ} 24' 10''$ N., lat. $4^{\circ} 12' 30''$ E.

Frederik.—Two lights as heretofore.

Doel.—One light as heretofore.

Liefkenshoek.—One light as heretofore.

Kruisschans.—One light as heretofore.

88.—AUSTRALIA.—*Victoria*.—*Warrnambool*.—The following alteration has been made in the arc of visibility of the lower, or red, light of Warrnambool harbour, viz. :—The eastern limit of the light has been extended so as to be seen across the five-fathom-bank, or to be visible between the bearings of N. $\frac{1}{4}$ E. to N.W.

89.—AUSTRALIA.—*Victoria*.—*Port Philip*.—The light on the foremast has been discontinued, and the vessel now exhibits only one light at the mainmast-head.

90.—UNITED STATES.—*California*.—*Montara Point*.—A steam fog-signal has been established at Montara point, southward of San Francisco bay. In thick or foggy weather a blast will be sounded of *five seconds'* duration, with an interval of *twenty-five seconds* ; then a blast of *ten seconds'* duration, followed by an interval of *twenty seconds*. Approximate position, lat. $37^{\circ} 32'$ N., long. $122^{\circ} 31'$ W.

91.—NORTH SEA.—*Netherlands*.—*North Hinder Light-vessel*.—A white riding light is now exhibited from the fore-stay, at 6 feet above the gun-whale, of the North Hinder light-vessel.

Note.—When the light-vessel is not in position, the riding-light, as well as the light of the vessel, will be extinguished, and red lights exhibited at the bow and stern.

92.—MEDITERRANEAN.—*Egypt*.—*Port Said*.—A *fixed green* light is now exhibited at extremity of the east breakwater, and the outer light-vessel, which hitherto exhibited a green light, has been removed.

Note.—Vessels entering Port Said should steer for the directing light on Lake Menzaleh as heretofore, keeping the red lights on the starboard hand and the green on the port hand.

93.—NEWFOUNDLAND.—*South Coast*.—*Fortune Bay*.—*Garnish*.—A *fixed red* light is now exhibited at Garnish, south side of Fortune bay,

20 feet above the level of the sea. The tower is octagonal shaped, built of wood, and painted white. Approximate position, lat. $47^{\circ} 14' N.$, long. $55^{\circ} 24' W.$

94.—NEWFOUNDLAND.—*Port Basque*.—*Channel Head*.—A fixed red light is now exhibited from a lighthouse on Channel head, west side of the entrance to Port Basque. Approximate position, lat. $47^{\circ} 38' 45'' N.$, long. $59^{\circ} 7' 10'' W.$

95.—CHINA.—*East Coast*.—*Breaker Point*.—Information has been received of the existence of a danger 3 miles to the south-west of Breaker point, on which the British steam-vessel *Ningpo* struck when on her voyage from Hongkong to Shanghai. The master of the *Ningpo* could not ascertain whether the danger the vessel struck on was a rock or a wreck, and the position he assigns to it—namely, Flat island bearing North, distant 3 miles, and at the same time Breaker point bearing N.E. $\frac{1}{2} N.$ —places the danger in about $22^{\circ} 51' 20'' N.$, long. $116^{\circ} 26' E.$, and $1\frac{1}{2}$ miles west of the position assigned to the danger on which the British steamship *Ulysses* struck in 1872. The depth of water alongside at the time the *Ningpo* struck was 11 fathoms.

Note.—As these reported dangers are uncertain in their position, mariners are cautioned accordingly.

96.—CHINA.—*East Coast*.—*Middle Dog Island*.—The beacon on Middle dog island, off the river Min, has been blown down, and will not be replaced.

97.—WEST INDIES.—*Jamaica*.—*Port Royal*.—The following alteration has been made in the buoyage at Port Royal in conformity with the uniform system adopted by the Trinity House, London, viz. :—

East Middle buoy, has been changed from black, to black and white vertical stripes.

Gun Cay buoy, has been changed from black and white horizontal, to black and white vertical stripes.

Rackum Cay buoy, has been changed from black, to black and white vertical stripes.

Turtle Head buoy, has been changed from white, to red and white vertical stripes.

Harbour Shoal buoy, has been changed from red and white horizontal, to red.

Port Royal Spit buoy, has been changed from white, to red.

A buoy is about to be placed, to mark the west side of a small reef, which lies N.N.W. $\frac{1}{2} W.$ one quarter of a mile from Drunkenman's Cay.

98.—UNITED STATES.—*Gulf of Mexico*.—*Atchafalaya Bay*.—*S.W. Reef Lighthouse*.—A steam fog-whistle is now established at South-west

reef lighthouse, Atchafalaya bay. In thick and foggy weather the whistle will give blasts of ten seconds' duration, at intervals of thirty seconds.

99.—CHINA.—*East Coast*.—*Shantung Promontory*.—With reference to Nautical Notice, No. 208 (November, 1874), on the intended exhibition of a light on Shantung promontory, further notice has been given, that the light is now exhibited. The light is a *fixed* light of the first order, showing *white* from between the bearings of S.E. by E. $\frac{1}{2}$ E. to S.S.E. $\frac{3}{4}$ E., *red* from S.S.E. $\frac{3}{4}$ E. to S. by E. $\frac{1}{2}$ E., *white* from S. by E. $\frac{1}{2}$ E. through west and north to N.N.E., and *red* from N.N.E. to N.E. $\frac{1}{3}$ E. The light is obscured by hill peaks between the bearings of S.E. by E. $\frac{1}{3}$ E., and S. by E. $\frac{1}{2}$ E.; and also by Alceste island between the bearings of S.S.E. and S.S.E. $\frac{1}{3}$ E. It is elevated 200 feet above the sea, and the white light should be seen 20 miles. The tower, 64 feet high, is circular, built of stone, and painted white. Approximate position, lat. $37^{\circ} 24' N.$, long. $122^{\circ} 42' E.$ Also, that the temporary light has been discontinued.

100.—ADRIATIC.—*Selve Island*.—*Point St. Antonio*.—A *fixed white* light, of the sixth order, is now exhibited on St. Antonio point, Selve island; it is elevated 28 feet above the sea, and should be seen 8 miles. The lantern is suspended from the keeper's dwelling, at a distance of 50 yards from the extremity of the point. Position, lat. $44^{\circ} 21' N.$, long. $14^{\circ} 42' E.$

101.—ADRIATIC.—*Maltempo Channel*.—*Dubno Point*.—A *fixed red* light is now exhibited on Dubno point, Canale di Maltempo; it is elevated 72 feet above the sea, and should be seen 2 miles. Position, lat. $45^{\circ} 15' N.$, long. $14^{\circ} 34' 30' E.$

102.—ADRIATIC.—*Maltempo Channel*.—*Port Selce*.—A *fixed white* light is now exhibited on the east point of Port Selce. It is elevated 39 feet above the sea, and should be seen 12 miles. And a *fixed green* harbour light is exhibited on the end of the pier, at the entrance to the port, 18 feet above the sea, and should be seen 2 miles. Position, lat. $45^{\circ} 9' N.$, long. $14^{\circ} 43' E.$

103.—INDIAN OCEAN.—*Seychelle Islands*.—*La Perle Reef*.—The following information relating to the dangerous shoal known as *La Perle reef*, lying to the south-west of, and distant 10 miles from Isle Platte, one of the Seychelle group, has been received from Commander Wharton, H.M. surveying vessel *Shearwater*, 1875. The danger appeared to consist of a reef 8 miles in length, but of little width, lying N.W. by N., and S.E. by S. No dry sand or rocks visible. The *Shearwater* anchored in $7\frac{1}{2}$ fathoms, one and a half miles from a long line of breakers, but the swell was too heavy to allow a boat to venture nearer than several hundred yards, where there was 4 fathoms. The breakers were not

20 feet above the level of the sea. The tower is octagonal shaped, built of wood, and painted white. Approximate position, lat. $47^{\circ} 14' N.$, long. $55^{\circ} 24' W.$

94.—NEWFOUNLAND.—*Port Basque*.—*Channel Head*.—A fixed red light is now exhibited from a lighthouse on Channel head, west side of the entrance to Port Basque. Approximate position, lat. $47^{\circ} 38' 45'' N.$, long. $59^{\circ} 7' 10'' W.$

95.—CHINA.—*East Coast*.—*Breaker Point*.—Information has been received of the existence of a danger 3 miles to the south-west of Breaker point, on which the British steam-vessel *Ningpo* struck when on her voyage from Hongkong to Shanghai. The master of the *Ningpo* could not ascertain whether the danger the vessel struck on was a rock or a wreck, and the position he assigns to it—namely, Flat island bearing North, distant 3 miles, and at the same time Breaker point bearing N.E. $\frac{1}{2} N.$ —places the danger in about $22^{\circ} 51' 20'' N.$, long. $116^{\circ} 26' E.$, and $1\frac{1}{2}$ miles west of the position assigned to the danger on which the British steamship *Ulysses* struck in 1872. The depth of water alongside at the time the *Ningpo* struck was 11 fathoms.

Note.—As these reported dangers are uncertain in their position, mariners are cautioned accordingly.

96.—CHINA.—*East Coast*.—*Middle Dog Island*.—The beacon on Middle dog island, off the river Min, has been blown down, and will not be replaced.

97.—WEST INDIES.—*Jamaica*.—*Port Royal*.—The following alteration has been made in the buoyage at Port Royal in conformity with the uniform system adopted by the Trinity House, London, viz. :—

East Middle buoy, has been changed from black, to black and white vertical stripes.

Gun Cay buoy, has been changed from black and white horizontal, to black and white vertical stripes.

Rackum Cay buoy, has been changed from black, to black and white vertical stripes.

Turtle Head buoy, has been changed from white, to red and white vertical stripes.

Harbour Shoal buoy, has been changed from red and white horizontal, to red.

Port Royal Spit buoy, has been changed from white, to red.

A buoy is about to be placed, to mark the west side of a small reef, which lies N.N.W. $\frac{1}{2} W.$ one quarter of a mile from Drunkenman's Cay.

98.—UNITED STATES.—*Gulf of Mexico*.—*Atchafalaya Bay*.—*S.W. Reef Lighthouse*.—A steam fog-whistle is now established at South-west

reef lighthouse, Atchafalaya bay. In thick and foggy weather the whistle will give blasts of *ten seconds'* duration, at intervals of *thirty seconds*.

99.—CHINA.—*East Coast*.—*Shantung Promontory*.—With reference to Nautical Notice, No. 203 (November, 1874), on the intended exhibition of a light on Shantung promontory, further notice has been given, that the light is now exhibited. The light is a *fixed* light of the first order, showing *white* from between the bearings of S.E. by E. $\frac{1}{4}$ E. to S.S.E. $\frac{3}{4}$ E., *red* from S.S.E. $\frac{3}{4}$ E. to S. by E. $\frac{1}{4}$ E., *white* from S. by E. $\frac{1}{4}$ E. through west and north to N.N.E., and *red* from N.N.E. to N.E. $\frac{1}{4}$ E. The light is obscured by hill peaks between the bearings of S.E. by E. $\frac{1}{4}$ E., and S. by E. $\frac{1}{4}$ E.; and also by Alceste island between the bearings of S.S.E. and S.S.E. $\frac{1}{4}$ E. It is elevated 200 feet above the sea, and the white light should be seen 20 miles. The tower, 64 feet high, is circular, built of stone, and painted *white*. Approximate position, lat. $37^{\circ} 24' N.$, long. $122^{\circ} 42' E.$ Also, that the temporary light *has been discontinued*.

100.—ADRIATIC.—*Selve Island*.—*Point St. Antonio*.—A *fixed white* light, of the sixth order, is now exhibited on St. Antonio point, Selve island; it is elevated 28 feet above the sea, and should be seen 8 miles. The lantern is suspended from the keeper's dwelling, at a distance of 50 yards from the extremity of the point. Position, lat. $44^{\circ} 21' N.$, long. $14^{\circ} 42' E.$

101.—ADRIATIC.—*Maltempo Channel*.—*Dubno Point*.—A *fixed red* light is now exhibited on Dubno point, Canale di Maltempo; it is elevated 72 feet above the sea, and should be seen 2 miles. Position, lat. $45^{\circ} 15' N.$, long. $14^{\circ} 34' 30' E.$

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103.—INDIAN OCEAN.—*Seychelle Islands*.—*La Perle Reef*.—The following information relating to the dangerous shoal known as *La Perle reef*, lying to the south-west of, and distant 10 miles from Isle Platte, one of the Seychelle group, has been received from Commander Wharton, H.M. surveying vessel *Shearwater*, 1875. The danger appeared to consist of a reef 3 miles in length, but of little width, lying N.W. by N., and S.E. by S. No dry sand or rocks visible. The *Shearwater* anchored in $7\frac{1}{2}$ fathoms, one and a half miles from a long line of breakers, but the swell was too heavy to allow a boat to venture nearer than several hundred yards, where there was 4 fathoms. The breakers were not

continuous, and were observed, especially in three spots, about a mile apart. The danger appears to be on the southern extreme of a bank of soundings connected with Isle Platte; on this bank 14 fathoms was obtained. When to the southward of La Perle reef, Isle Platte was seen from the masthead of the *Shearwater*. Commander Wharton places the centre of La Perle reef in lat. $6^{\circ} 1' S.$, long. $55^{\circ} 21' E.$, and Isle Platte, south end, in lat. $5^{\circ} 58' S.$, long. $55^{\circ} 27' E.$

104.—BERMUDA ISLANDS.—*Mills Breaker*.—Information has been received that an iron buoy has been placed near Mills breaker, about $2\frac{1}{4}$ miles N.N.E. $\frac{3}{4}$ E. from St. David head.

105.—MEDITERRANEAN.—*Greece*.—*Marathonisi*.—With reference to Nautical Notice, No. 34 (January, 1875), on the temporary suspension of the light on Crane island, during repairs to the lighthouse, information has been received that the light is again exhibited.

106.—NORTH SEA.—*Jade River Entrance*.—*Outer Light-vessel*.—When a ship in the vicinity of the light-vessel is observed steering a wrong course, she will not be warned by a minute gun as heretofore, but by a double discharge every three minutes.

107.—GULF OF ST. LAWRENCE.—*Chaleur Bay*.—*Miscou Island*.—A light is now exhibited from a lighthouse at Goose lake, western side of Miscou island. The light will be a revolving white light, attaining its greatest brilliancy every minute, elevated 40 feet above high water, and should be seen 10 miles. The tower 28 feet high, is a square wooden building, painted white, and attached to the keeper's dwelling. Position, lat. $47^{\circ} 55' 60'' N.$, long. $64^{\circ} 85' 40'' W.$

108.—LAKE ERIE.—*Cleveland Harbour*.—From the opening of navigation, 1875, the following alteration will be made in the lights at Cleveland harbour:—A fixed light, varied by red flashes every twenty seconds, of the sixth order, will be exhibited from a frame beacon on the end of the West pier in place of the beacon (No. 1.) on the East pier, discontinued. The new light will be elevated 47 feet above the lake, and should be seen 11 miles. The beacon, 40 feet high, is square, and is painted black below and white above. Position, lat. $41^{\circ} 30' N.$, long. $81^{\circ} 41' W.$ A fog-bell will be placed in front of the beacon, which will be sounded at intervals of ten seconds in thick or foggy weather.

109.—ENGLAND.—*South Coast*.—*Dungeness*.—In consequence of the beach at Dungeness having grown out, so that the lighthouse is now some distance inland, it has been decided to mark the edge of the shore by an additional lighthouse placed to the S.E. of the present lighthouse, as near the high water line as practicable, and that on or about the 1st July, 1875, a light will be exhibited therefrom. The additional light

will be a *flashing* light, showing a bright quick flash *every five seconds*, the dark interval between each flash being of about *three seconds'* duration. The fog-signal will, at the same time, be moved to the additional lighthouse.

110.—ENGLAND.—*South Coast.*—*Dungeness.*—In the course of the year 1875, the light of Dungeness will be changed from an electric light to the most powerful form of oil light, and the red light seen from the westward will then be shown from the lantern, instead of, as now, from a window beneath it. There will consequently, then, be no white light seen from the westward between the bearing of East and the land.

CHARTS, &c., Published by the Hydrographic Office, Admiralty, to the end of March, 1875, and Sold by the Agent, J. D. Potter, 81, Poultry, and 11, King Street, Tower Hill.

No.	Scale.		s.	d.
674	m = { 1·5 } { 6·0 }	Africa, East Coast:—Dar es Salaam and adjoining anchorages	...	2 6
2758	m = 1·0	Gulf of St. Lawrence:—Bras d'Or Lake; Cape Breton Island	...	1 6

FIRES AT SEA.—It should be made generally known among ship captains and officers, that cotton material, which happens to have been in contact with and imbibed animal or vegetable fatty oils, is very liable to spontaneous combustion if stowed away in such a manner that a certain temperature is reached and the air has moderate access to it. From experiments made by Mr. John Galletly, in 1872, it was shown that cotton waste, soaked in boiled linseed oil and placed in a common lucifer box, ignited within an hour at a temperature of 166° Fahr. Raw linseed and rape oil proved to be not quite so susceptible to combustion, but olive, castor, lard, sperm, and seal oils produced ignition at a temperature of 130° Fahr. These results are most important in connection with steam ships, and indeed, should we think, be borne in mind by masters and officers of all vessels which have to endure great heat, such as that of the tropics for instance. Greasy waste is very commonly used and is as commonly thrown on one side out of the way when done with; and considering that the temperatures of 166° and 130° are soon reached in the vicinity of steam-pipes and by exposure to solar rays, we think these few words of caution are worthy of serious attention.

OUR OFFICIAL LOG.

SHIPPING AND MERCANTILE GAZETTE CORRESPONDENCE.

(Reprinted by special arrangement with Sir WILLIAM MITCHELL.)

SIGNALS OF DISTRESS.—In consequence of the disaster to the *Northfleet*, I am desirous to adopt a particular kind of danger-signal, or signals of distress. Being mostly at sea, I am ignorant if any law has been passed on this subject. I beg you to inform me if something has been decided; and, if so, what sort of signals must be used at nighttime, to be distinguished from any other?—[The following is the schedule in the Merchant Shipping Act, 1878 (published, *in extenso*, as a supplement to Part II. of *Maritime Notes and Queries*), referring to the signals of distress:—"In the daytime.—The following signals, numbered 1, 2, and 3, when used or displayed together or separately, shall be deemed to be signals of distress in the daytime: 1. A gun fired at intervals of about a minute. 2. The *International Code* signal of distress, indicated by N C. 3. The distant signal, consisting of a square flag having either above or below it a ball, or anything resembling a ball. At night.—The following signals, numbered 1, 2, and 3, when used or displayed together or separately, shall be deemed to be signals of distress at night:—1. A gun fired at intervals of about a minute. 2. Flames on the ship, as from a burning tar-barrel, oil-barrel, &c. 3. Rockets or shells, of any colour or description, fired one at a time, at short intervals."

TOTAL OR CONSTRUCTIVE LOSS.—A vessel of mine was insured at Lloyd's for a "total and absolute loss" only. She got ashore, was wrecked, and every means were tried to get her off, but did not succeed. She was condemned by the surveyor and Lloyd's agent, and sold for the benefit of all concerned. I made my claim on the underwriters, but they object paying me in full on the ground that the vessel was not absolutely lost. What constitutes a total, an absolute, or a constructive loss?—[If a ship cannot be repaired, so as to continue the venture, after being rescued, except at a cost greater than the value of the property would become after such expenditure, that would constitute a constructive total loss. Where a ship was insured "against total loss only," it was held to include a constructive total loss, as well as an actual or absolute total loss, unless it is stipulated to be against total loss only, "without benefit of salvage." ("Adams v. Mackenzie," Common Pleas, January 17, 1863; see also the *Avon*, "Farnworth v. Hyde," Common Pleas, February 27, 1865, reported in *Shipping and Mercantile Gazette*.) In considering the question of total loss, they (the jury) ought not to look to the value in the policy; but if they thought, under all the circumstances, a prudent owner uninsured would not have repaired the ship, it

was a total loss.—“*Turing v. Young*,” Common Pleas, February 29, 1878.]

MASTER'S WAGES.—I resigned command of a ship (after thirteen months' voyage), in writing, which was accepted by the owner, and in about a week tendered him my account, and then received a cheque for part of money due to me. The owner said that he wanted time to go over the account before he would finally settle with me, and that he would send me the balance by post in a few days. Nearly five months' time has elapsed, and I have not received it yet, although I am continually applying for the same; but a month ago I received a letter from the owner, stating that he has been much engaged, and that the matter should have his attention, and that he would write me in a few days. I have not heard a word from him yet. Can I claim wages from the time I handed in my account until I am finally settled with?—[A master has the same right, liens, and remedies for the recovery of his wages which, by the Merchant Shipping Act (*vide* section 191), or by any law or custom, a seaman may have. In all cases the seaman shall, at the time of his discharge, be entitled to be paid on account a sum equal to one-fourth of the balance due to him; and every owner who neglects or refuses to make such payment shall pay a sum not exceeding the amount of two days' pay for each of the days, not exceeding ten days. No order for the payment of money in any summary proceedings can be made in the United Kingdom unless proceedings are commenced within six months after the cause of complaint arises (section 525). If the claim is above £50, our correspondent would have to apply to the Admiralty Court, which has power also to settle all accounts. Pending an action for the recovery of his wages, a master has a claim for maintenance and wages. The Court would entertain the question, in the settlement of costs, of compensation for the loss of service by unreasonably withholding of the wages, and non-compliance with the requirements of the Act.]

CARGO OF OATS.—I arrived at Bristol on the 27th of December with a cargo of 80 tons of oats. What is a reasonable time for discharging, having no laying-days in the charter?—[The ship should be discharged in three clear working days.]

FULL AND COMPLETE CARGO.—I chartered my vessel at Portsmouth to load a full and complete cargo of pitch in bulk (say 115 tons), ten days for loading and discharging. After waiting seven days in loading 105 tons, I was told by parties shipping the cargo I should not get any more, however long I might wait, but that I should get payment of freight on full deadweight capacity. The consignee will only pay on quantity delivered. Can I recover the difference?—[If the holder of the bill of lading was not the charterer of the ship, and the cargo did not belong to him, the pitch must be delivered on the conditions stated in the bill of

lading. The charterer is liable for the difference in freight between what was actually shipped and a full and complete cargo. The charterer, therefore, should be sued for dead freight.]

A ship is chartered to take in about 200 St. Petersburg standards. What is the meaning of the word "about," and what percentage over or under the 200 standards is allowed so as not to vitiate the charter?—[The term "thereabouts," which has the same signification as "about," was held in the cause of the *Advance*—("Windle v. Barker," Exchequer Chamber, reported in *Shipping and Mercantile Gazette*, June 20)—1856, not to be a condition precedent, and the description not a warranty entitling the charterer to rescind a contract. About 200 standards, therefore, would imply rather more or less than that quantity, but the percentage of the lesser quantity would depend upon the ship's carrying capacity.]

Co-ownership.—A is the owner of a small coasting smack of 48 tons register, and worth, at the commencement of this affair, about £250. She discharged a cargo in London. B, the master of the smack, sails from there light to another port, but not to the port where the vessel belongs; has an interview with C, who is a shipbuilder, and eventually the vessel is hauled up on a patent slip and undergoes a general repair. The owner knows nothing about it until he receives bills to the amount of between £200 and £300, at which he is very much alarmed and surprised, for it was done without his knowledge or consent, and quite contrary to his orders. What claim has C upon the Owner A?—[Co-owners are not liable on contracts for the ship entered into by the master merely because they are owners, or appear on the register as such, unless the master is also held out by the co-owners as their master acting on their behalf in the conduct, management, and direction of the vessel, and in goods and repairs. The master of a ship, therefore, who pledges the authority of a shipowner in the United Kingdom for repairs or necessaries is himself personally responsible, unless he first communicates with his owner or owners, and receives assent to pledge his or their credit for the same.]

Boat Hire or Crew.—I shipped a crew at Buenos Ayres, my vessel at the time lying at the inner harbour. Am I bound to pay for the crew going off to join the ship, or should the crew pay for the same?—[A seaman's right to wages and provisions commences either at the time at which he begins work, or at the time specified in the agreement for his commencement of work or his presence on board, whichever first happens. (Section 181 of Merchant Shipping Act, 1854.) He has, therefore, to present himself on board to fulfil his engagement, and this he must do at his own cost, unless there is an agreement to the contrary. As a matter of custom, the masters of ships send boats for hired men, but there is no legal compulsion on them to do so.]

GENERAL.

THE MARINE DEPARTMENT AND UNSEAWORTHY SHIPS.—In the *Nautical Magazine*, for November last, we referred to a Parliamentary return, showing the number of vessels which had been surveyed as unseaworthy, under the powers given to the Board of Trade by the 12th Section of the Merchant Shipping Act, 1875, from the 5th August, 1873, to the 31st July, 1874. We have now before us a continuation of this return, bringing it down to the end of last year. From this it appears that since the passing of the Act, 440 vessels have been surveyed for defects in either hull, equipments, or machinery, and that of this number 17 only were steam vessels. Fourteen only were found seaworthy, upon survey 404 were pronounced unseaworthy, and the remaining 22 cases were pending. In 25 cases the vessels were broken up or dismantled after survey. Government officers are stated to be the source of information in 408 cases, crews in 18, and "other persons" in 24 cases. The return accounts for 34 cases of overloading only, and it is satisfactory, or rather unsatisfactory to find that the action taken by the Board of Trade was justified as each vessel appears to have been unloaded or reloaded to the satisfaction of their surveyors. We still think as we stated in November that many cases of overloading occur which are either not brought to the knowledge of the Board of Trade at all, or not until too late to allow of the Act being put into operation. In fact, it is difficult to see how the Board of Trade can "have reason to believe that a vessel is unfit to proceed to sea without serious danger to human life by reason of overloading;" which must be the condition of things before the Act can be put in force, until such overloading is completed and inasmuch as vessels usually leave port immediately after loading, we suspect that many cases are reported too late. Otherwise it is rather singular to find that cases of overloading form so small a proportion of the number of vessels considered by the Board of Trade to be "unseaworthy." The return is a very complete one, carefully summarised, and shows clearly the tonnage of every vessel surveyed, which ranges from 15 to 1,500 tons.

LIGHT FOR LIGHTHOUSES.—It seems from a recently published Parliamentary paper that gas is not likely at present to supersede oil in our lighthouses. The Irish lighthouse authorities, however, are quite in love with gas, and Dr. Tyndall's admiration for it is very great. But the Trinity House and the Scotch Lighthouse Commissioners hang back and do not appear to be at all eager to adopt such a light-producing agent for their lighthouses. For domestic purposes, with the pipes laid along our streets, gas is, no doubt, an exceedingly convenient illuminator, but for isolated lighthouses far away from towns and villages and where the pipes

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are not laid on, the advantages of gas are not very evident. To supply gas generally to our lighthouses it would be necessary to upset all the present arrangements for burning oil, and to put up at each station a gasometer with all the necessary gas-making plant, and then there would be the special daily labour of making gas. A gasometer in one's back garden is not a very desirable thing, and if the use of gas for domestic purposes necessitated such an arrangement, it is more than probable that oil, ozokerit, or the friendly tallow would be invoked to lighten the darkness of our domestic hearths. So we presume it is much the same with lighthouses; gas with its outbuildings, &c., would be a great trouble and an expense compared with oil as now used, while in regard to light, the practical difference between the two appears to be so small that "*le jeu ne vaut pas la chandelle*." Dr. Tyndall says a great deal about the flexibility of the gas light, *i.e.*, its power of being instantaneously turned up or down, a capability in his opinion of great value for lighthouse purposes, and he intimates that this power might be applied in such a way that a lighthouse might by an arrangement of flashes be made to spell out its own name. With all deference to the learned professor we must say that our sympathies are entirely with the Elder Brethren of the Trinity House in this matter, whose views appear to us so perfectly just that we reproduce them, feeling sure that many of our readers will entirely endorse what the Elder Brethren say:—"To every sailor, whatever his amount of intelligence may be, the hour of danger is one when simplicity of effect and facility for rapid determination are above all things required, and although the increase in the number of lights is constantly calling for a revision in the methods of distinction (the settlement of which is partly conditional on the determination of the value of intensity previously referred to), the Elder Brethren have other alternatives than a resort to the unsatisfactory refinements of long and short flashes as in the Morse alphabet, or any application of eclipses other than those now recognised for revolving lights, or in fact to spell, where the loss of one letter, (if it may be so called) may produce an effect the reverse of that intended, and lead consequently to danger and disaster; and beyond requiring the mariner in very crowded navigation to count two or three flashes of equal duration grouped together, as it were, at the beginning of each minute or half-minute, they trust they may never need to put responsibilities of difficult identification upon those who could not be universally, and therefore not effectually, able to respond to them."

ADMIRAL RYDER'S LIFE-SAVING BELTS AND MATTRESSES.—Admiral Ryder is indefatigable in the matter of life-saving gear. His cork-mattresses and life-belts have received well-deserved commendation on all sides and his continued philanthropic efforts in this direction are worthy of respect and admiration. His last plan is to make ordinary hair-mat-

tresses available for life-saving purposes, and this object he says may be achieved by the use of waterproof covers. His first proposition is to make a cover in the shape of a case or sack, fitted with a lacing and internal flaps at the opening at one end, into which the ordinary hair-mattress and hammock may be stowed, care being taken to lash up the end quite tight. The other method which is simpler but perhaps not quite so effective, is to have a waterproof sheet interposed between the mattress and the hammock, the end and sides of this sheet being lapped over the mattress previous to lashing up. Such an arrangement will be sufficient to support a man on the surface of the water for some hours. The material of the cover and the sheet should be stout calico waterproofed with boiled oil in the manner familiar to sailors, and the expense is therefore very small in comparison with other life-saving gear. We think the sheet would be exceedingly useful for coasting vessels, and for a shipwrecked crew in a boat the value and comfort of such a waterproof would be considerable. It should, however, be stated that the Admiral still remains faithful to his granulated cork-mattress, but he suggests the cover or the sheet for use as the next best thing when cork-mattresses are not at hand.

THE SACREDNESS OF SHIP LAUNCHING, 1875.—Our New York contemporary, the *Nautical Gazette*, communeth on this subject as follows:—"The launching of Her Majesty's ships is no longer to be a merely secular ceremony. Hitherto, knocking away the dog shores, cutting the silk cord, and smashing the bottle of wine on the ship's bows at the moment she glides 'into her native element,' have constituted the entire ritual of the launching and naming of the vessel. An Admiralty circular has, however, just been issued to the dockyards, which gives a form of service, prepared by the Archbishop of Canterbury, to be observed 'at the launching of any ship or vessel which may be added to the Navy.' The service commences with the 107th Psalm, beginning with verse 23—'They that go down to the sea in ships.' The Lesson contains the following verse: "43, Whoso is wise and will observe these things, even they shall understand the loving kindness of the Lord." The primate's special prayer is as follows:—"O Thou that sittest above the water-floods and stillest the raging of the sea, accept, we beseech Thee, the supplications of Thy servants for all who in this ship, now and hereafter, shall commit their lives unto the perils of the deep. All their ways enable them truly and godly to serve Thee, and by their Christian lives to set forth Thy glory throughout the earth. Watch over them in their going forth and their coming in, that no evil befall them nor mischief come nigh to hurt their souls, and so through all the changes and chances of this mortal life, bring them of Thy mercy to the sure haven of Thine

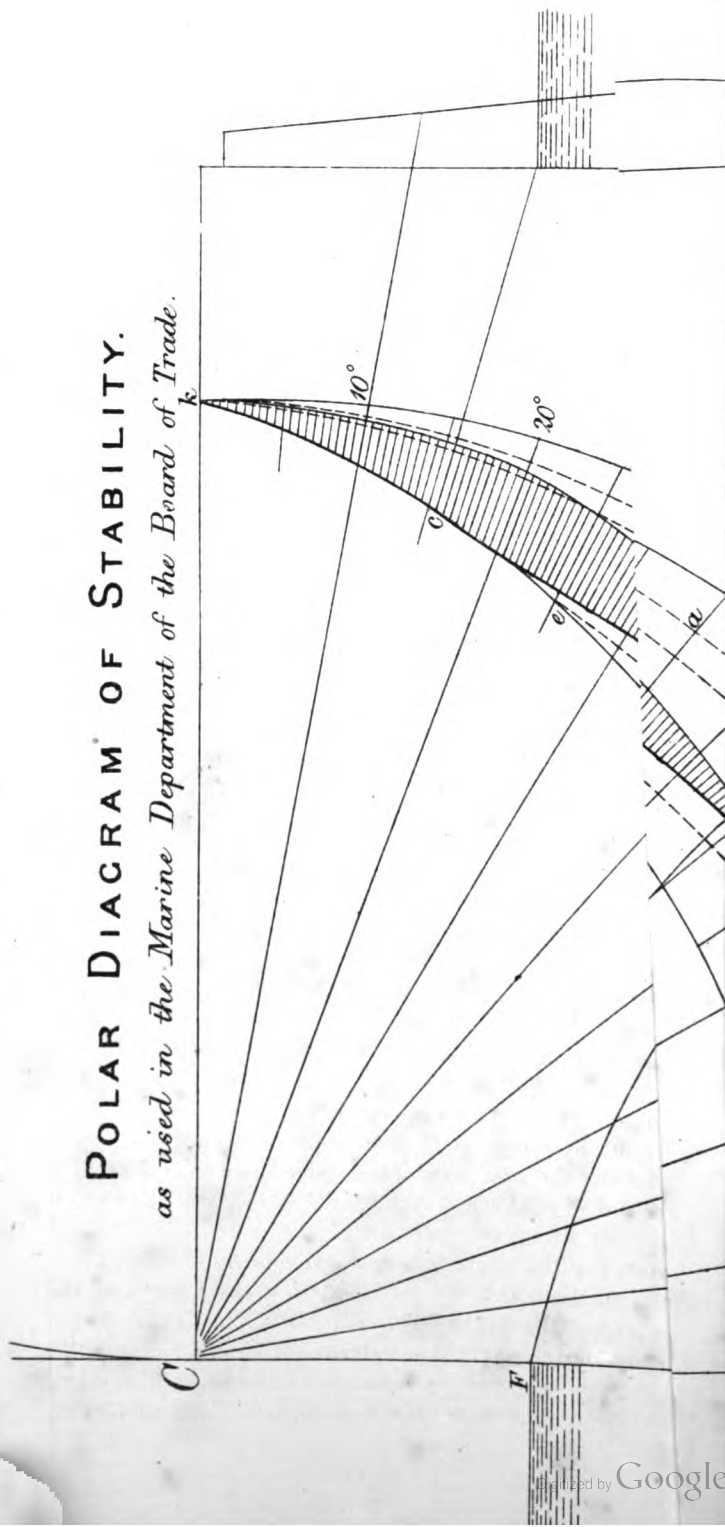
everlasting kingdom, through Jesus Christ our Lord, Amen.' The Lord's Prayer concludes the ceremonial." It is to be remembered, that the people of the Indies* were destroyed, under *Vasco de Gama*, by missiles from guns and ships that were duly consecrated by the Archbishop of Seville with all the pomps and ceremonies of the Christian Church three hundred and fifty years ago. "*En passant*, we would suggest the propriety of giving the vessels godfathers and godmothers, then—the captain and owners representing the vessel, in case of a Board of Trade investigation—they might satisfactorily answer the question:—'What did your godfathers and godmothers promise for you?' The public might then get an idea of what many of the sheet iron coffins, with the worthless and rotten iron masts, were originally intended for."

LIGHTS FOR BOATS.—There appears to be a wide-spread feeling amongst those interested in small boats that they are not required to do anything for their own safety or protection so far as the exhibition of lights is concerned. We would point out to such persons that Art. 9 of the Regulations for Preventing Collisions at Sea provides as follows:—"Open fishing boats and other open boats shall not be required to carry the side-lights required for other vessels; but shall, if they do not carry such lights, carry a lantern having a green slide on the one side and a red slide on the other side; and on the approach of, or to, other vessels, such lantern shall be exhibited in sufficient time to prevent collision, so that the green light shall not be seen on the port side, nor the red light on the starboard side. Fishing vessels and open boats, when at anchor or attached to their nets, and stationary, shall exhibit a bright white light. Fishing vessels and open boats shall, however, not be prevented from using a flare-up in addition if considered expedient." Of course, if boats do not comply with these requirements, it is themselves who will suffer by it, and it will be their own fault if a steamer or sailing vessel should run them down. They can only neglect to comply with the regulations at their own risk, and, although they may not do much harm to a ship, they will find it objectionable to be cut in two should they come in collision with a large vessel.

* See *Nautical Magazine*, pages 112 to 117, year 1875.

POLAR DIACRAM OF STABILITY.

as used in the Marine Department of the Board of Trade.




Mr. M^r Farlane Gray's Report on the "Sourabaya."

THE
NAUTICAL MAGAZINE.

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MAY, 1875.

THE LOAD-LINE QUESTION.

HE Merchant Shipping Amendment Bill, now before Parliament, after recapitulating the provisions of previous Acts as to the marking of the name, port of registry, and scale of feet at stem and stern, proposes an additional scale to show the freeboard as follows:—

“A scale of feet for the purpose of denoting the extent of her clear side shall be marked on each of her sides at a distance abaft the stem equal to three-fifths of her length between perpendiculars. The zero point of this scale shall be at the deck up to which full scantlings are carried, and shall be marked at a point level with the top of the deck plank next the waterway at the place of marking, and the scale shall be carried downward to a distance equal to one-third of the ship's depth below the said zero point.”

In this the Bill follows closely the Report of the Royal Commissioners, who obviously mean the same, although it is not so clearly said, when they recommend that “the zero point of the scale should be at the lowest part of the upper side of the highest deck, that is, of the deck up to which the ship is completely strong and watertight.”

It is well known that the object of this marking is not for official purposes, as was the provision as to the marking of a scale of feet upon the stem and stern-post in the Act of 1873. The Board of Trade officers, whose duty it is to record the draught of water and freeboard, have usually to go on board the ship to enquire as to her cargo, and it is but a trifling matter for them where to measure the clear side. At all events, we

think we may assume that the extra facilities for the official record of freeboard are not worth the disfigurement of all the ships of our Mercantile Marine by scales of feet marked on the most prominent part of their sides. The object of a scale of freeboard is, as everyone knows, not that the captain or that the Board of Trade Surveyor may the more easily record clear side, but that the sailor, or anyone acting in the sailor's interest, may see when a ship is very much overladen. If ships had been so marked during the last year or two, there certainly would have been less excuse for the contradictory evidence which has been given at recent enquiries about alleged overloading. In estimating the value of the proposed scale then, it is important that we keep clearly before us its chief design. Will the information conveyed by it be of much real use to the persons to whom it is so conveyed? Will the evidence of overloading, thus exhibited before all the world, deter greedy owners from overloading?

First, as to the zero point of the scale. The Bill proposes to fix it at three-fifths of the ship's length between perpendiculars. This point is chosen as being that which is usually the lowest point of the side, and it would, no doubt, be the best point of measurement in the majority of existing ships. But it is unfortunately true that in any legislation it does not answer to provide merely for existing cases; provision must also be made for alterations in practice which may be brought about by the legislation itself, or rather by endeavours to evade its spirit while conforming to its letter. If a scale were marked at three-fifths of a ship's length from her stem to show freeboard, we should soon see ships produced which would show a good clear side at that point. Our merchant ships would soon have as much sheer aft as forward; it might even be that the lowest point of the side would be as much before the middle line as it is now abaft it. This might be done without any absolute distortion of shape, but who is to guarantee us against absolute distortion. When we remember how much energy and perseverance are in these days devoted to the production of "razors never meant to shave but to be sold," and other articles only appearing to be what they profess to be, it is only fair to suppose that ships may be produced which will merely *show* a good clear side. At present many shipbuilders make it their constant study how to cut and contrive ships which shall get a class at Lloyd's with the least possible amount of material, and the cheapest way of putting the material together; and one can easily imagine with what ingenuity ships would be designed to show a good freeboard, and yet be deeply laden. Flat decks and no sheer would reduce the real but would not affect the apparent freeboard as shown by the scale, and so in certain quarters we should see ships appearing with no round of beam and no sheer. All this might be expected to follow the marking of a scale

showing lineal freeboard merely, at any point whatever, but it would be easier to give a large apparent with a small actual freeboard, when the scale was as proposed by the Bill, than if it were amidships. We do not attach an undue importance to the difference ; it is as easy to produce a counterfeit half-crown as a florin, but for each one of the former successfully passed there is sixpence more gained.

There is a further objection we conceive to the marking of a scale on the ship's side, in that it gives undue prominence to what, after all, is but one element in the question at issue. A vessel's freeboard is always compared with her depth of hold, and properly so when other material circumstances are considered at the same time. This, however, can only be done with advantage by those who are able to make the necessary allowances for the other circumstances of the case, or at least able to appreciate something of their real value. What does a vessel's freeboard in feet and inches, as compared with her depth of hold, tell us of her seaworthiness, nothing else being known ? We have seen that the freeboard read off from the scale might be illusory, the depth of hold also would be no less misleading. The depth of hold is measured at the midship point of the length from the under side of the tonnage-deck to the ceiling on the floors or floor-plates, as the case may be, at the side of the keelson. If the ceiling at the point of measurement be of extra thickness, as is usually the case with the limber-strake in a wooden ship, then only the average thickness is allowed, and thus the depth of hold is the depth to the fair inside surface of the ship amidships. This depth is the same whether the floor is flat or rises, and thus it is, that a vessel with a midship section almost a rectangle, might show the same ratio of freeboard to depth of hold as another with what is usually known as a *peg-top* midship section, while the proportion of volume above water would differ widely in the two cases. Thus, an observer, who knew nothing of the real merits of the case, would, by a mere comparison of the freeboard with the depth of hold, come to a most erroneous conclusion. One vessel whose depth of hold was the depth for three-fourths of her breadth would appear to be less deeply-laden than she really was, while another, whose depth of hold was merely her extreme depth amidships, would be put down as over-laden when she really had no more than a safe load. This would, moreover, operate to the disadvantage of the better-formed ship of the two. Lineal freeboard, then, as compared with depth of hold alone, furnishes but the means of a very rough judgment of the condition of a ship.

The question next presents itself whether the scale could with advantage be supplemented by another, showing the volume of the ship above water, expressed in percentages of the total volume. This would take account of round of beam, sheer, rise of floor, and fineness of form.

Most of the schemes hitherto proposed for marking or for cutting off such percentages only do approximately what, if it were done at all, should be done accurately. In our last number we dealt with one of these schemes, which is, perhaps, the least accurate of them all, and there laid down what we think should be an essential feature in any marking of percentages on a ship's side:—"That it should do what it professes to do with at least as much accuracy as it is possible to attain in measuring a vessel's freeboard on her leaving port." Suppose, however, that, as might easily enough be done, a scale of percentages was marked on every ship's side, starting from the main upper-deck, let us consider what would be its value. It would certainly be a corrective to the foot scale as regards sheer, rise of floor, round of beam, and fineness of form. All these would be taken in by it, and hence there would be no inducement to builders to distort their designs in order to obtain a high zero point. One difficulty, however, is common to both scales: at what deck should the zero point be fixed? The Royal Commissioners say "the deck up to which the ship is completely strong and water-tight," the Government Bill says "the deck up to which full scantlings are carried," obviously pretty much the same thing. Unfortunately it is in many cases very difficult to define a main upper-deck. If the practice of the registries of shipping be considered, it would appear that a somewhat better definition would be the deck up to which the dimensions are taken which determine the scantlings of the ship altogether. We propose to go into this question of scantlings at some length, as it concerns the whole subject of freeboard.

The principle upon which the dimensions of the various parts of an iron ship are regulated by Lloyd's rules, is that those parts of the structure which are arranged transversely, depend for their size upon the transverse dimensions of the ship. Thus the scantlings of the angle-irons forming the frames and reversed frames, the dimensions of the floor-plates, the thicknesses of transverse bulkheads, and the diameters of pillars to beams are regulated by the measure all round the half-midship section of the ship, or, as it is stated in the rules, the sum of the half-breadth, the depth, and the half-girth. The size of the outside plating, decks, keel, and all the parts of the structure not placed transversely, are determined by the number produced by the multiplication of the last-named number by the length of the ship. This is the rule for one and two-decked ships, and holds good for the main structure whatever may be above it in the shape of a spar-deck, awning-deck, poop, &c. If, however, the ship is what is called a full three-decked vessel, the scantlings are determined by the measure all round the half-midship section, *minus* seven feet. It thus appears that a spar-deck or awning-deck are virtually regarded as superstructures, but at the same time even in

a full three-decked vessel a certain reduction is allowed in scantlings, or rather, it may be said, a third deck does not add so much to the weight of the main structure as a second deck does. By the rules of the Liverpool Registry, the frames and reverse frames are regulated by the depth of hold of the ship, the plating by the sum of the half-breadth and depth, the floors by the breadth of the ship, and the keel, stem, and sternpost, by the tonnage under deck. The deck-stringers and the keelsons are determined by the length alone. In the rules of the Bureau Veritas, the sizes of the keel, keelson, plating, and deck-stringers, are regulated by the product of the length, breadth, and depth; the frames, reversed frames, bulkheads, and floors, by the sum of breadth and depth. These several systems have been the subject of much complaint, chiefly on the ground that no provision is made for fineness of form, and that thus the building of very full ships is promoted by the rules of the registries. It is unfortunately the case, that the builders of ships in many cases, set before them as their chief object, the production of a ship which shall just pass Lloyd's, and shall be built with the least amount of material consistent with that object. It should be observed that the dimensions upon which scantlings depend in the two last-named registries, as in Lloyd's, are the dimensions to the main upper-deck, and that superstructures and light spar-decks have no influence in the determination of scantlings in the main part of the vessel. In the Liverpool rules, provision is made for a class of vessels which appear to be of strengths intermediate between the full "three-decked" and the "spar-decked" ships of Lloyd's. Thus the thickness of plating below the main-deck is regulated with reference to the size of the ship below that deck merely, while the sizes of the frames and reverse frames are determined by adding three-fourths of the height between decks to the depth of hold.

We have gone into detail to some extent, because without some such reference to matters of detail it is impossible to appreciate the difficulty of determining what is a main upper-deck, even with classed ships. It should be noted that in all the registry books, arrangements are made for increased scantlings in the case of vessels whose dimensions vary much from the usual proportions, but this has no reference to the question we are now considering.

It is to be remarked that the rules of the registries give merely the minimum scantlings which a ship may have when she is to take a certain class. As might be expected, the minimum in the majority of cases is the actual scantling; but it sometimes happens that shipowners prefer to have iron put into their vessels in excess of the requirements of the rules, and this, we believe, is often the case with vessels built as spar or awning-decked, so that practically there are not merely the three classes

we have named, of spar, awning, and full three-decked ships, but all sorts of gradations between them. This, of course, increases the difficulty of marking a freeboard scale. A three-decked vessel may be of such dimensions that her middle deck would be under water when she had a proper and moderate amount of cargo on board; a spar-decked vessel is built of the same dimensions and form, which all but takes the three-deck class, but just misses it from some very very trifling defect. The first vessel has her middle-deck below water, and yet shows a reasonable percentage above water; the second must not only have her middle-deck above water, but must have the zero of the scales at that deck, and, consequently, would be almost certain to fall under the unjust imputation of being overladen. Further, there is the case of unclassed ships to be considered. There is nothing to prevent a ship being built with such scantlings altogether as would be less than the main structure of a spar-decked ship at Lloyds, but because the upper-deck stringers and sheer-strakes were made of the full scantling, and all the frames and reverse frames carried up, she would have her scales marked from the upper-deck, and thus would appear all right when she was really dangerously overladen. It has been proposed to assess spar-decks, awning-decks, and superstructures, considering two, three, or more tons in them, as of equal value with one ton under the main-deck, and thus form a percentage scale, which should include them, and assign to each its true value. Our objection to this is that such assessment would be entirely a matter of opinion, and probably no two surveyors would agree in any case. We think that it is imperatively necessary that any percentage scale should be a matter of fact and not of opinion, and if facts which can be shown are likely to mislead, because they do not fully state the case, better would it be to give up marking altogether than to record matters of opinion merely. As an instance of the difficulty of arriving at the true value of superstructures in determining freeboard, we will take a common type of ship. A poop extends for half her length, covering the engines and boilers; there is good sheer, and a top-gallant forecastle, of full height, occupies one-sixth of the length of the main-deck. Besides this, there are high and strong coamings. An excellent type of sea-boat one would at once think, and it would be said that she would do with half the freeboard which would be required for a vessel of the same size merely flush-decked. The scale, however, would take no cognisance of all these good points; could they not be assessed, and the percentage altered accordingly? If form only were taken into consideration, they would, no doubt, be assessed favourably, and the vessel in question would have the zero point of the scale placed very high. But it must be remembered that in such a vessel classed at Lloyd's the scantlings would be regulated by measurements taken at the midship section—that is, at a

place where the ship is much smaller than anywhere else. The poop, the forecastle, and the great sheer, may give a dry deck, but the vessel is positively weaker, structurally, than a flush-decked ship of the same length and depth.

In connection with the value of superstructures to a vessel arises the question of sheer. Consider, for instance, a raised quarter-deck; is it not much of the same character as sheer? does it not fulfil the same purpose? Why, then, should the sheer of the ship be considered as part of the under-deck volume and taken at its full value, while the tonnage of a raised quarter-deck is assessed at much less than its total amount? It is usually considered a good thing to have a vessel higher at the ends than in the middle, because from pitching and other reasons the seas are higher in relation to the ship there than amidships. If the same height at the ends were secured by breaks in the deck, those breaks would, doubtless, in the aggregate, be of equal value with sheer, but the whole cubic content of them would be from four to six times the content of the sheer, and thus each ton in the latter would be of the same service as from four to six tons in the breaks. A raised quarter-deck, extending so far amidships as to cover the engine-room, has a distinct use and value for that reason; even then it may be said the engine-room would be as well covered with a strong bridge-house. The value of superstructures to a ship can only be estimated when all other particulars about her are known; we think they very often stand in such a relation to the other parts of the structure that no extra freeboard should in justice be allowed for them. It is a pretty common opinion that they exist because they are useful, and improve the quality of the ship; we are afraid in many cases their *raison d'être* is the registry-book. If a shipbuilder wishes to have a roomy ship for the least money, his first care is to build her with full lines so as to get large displacement with small scantlings; and then, to get still more room, a poop and forecastle are built, and the main structure of his full ship with a large poop and forecastle will have the same scantlings as a fine flush-decked vessel of the same dimensions. And then, because she is burdened and weakened by a poop and forecastle, is she to have less freeboard, and thus be still further burdened and strained? We are quite aware that provision is made for strengthening the ship just at the break in her side caused by the abrupt ending of the poop; but still, for all that, anyone looking at the question from an impartial standpoint, will see that poops, breaks, and forecastles must be, in the main, sources of weakness.

With many it has been a favourite idea that it would be a good thing to cut the knot of the complicated question of freeboard by some simple rule, taking in some one or two of the most important considerations, and making up for its want of accuracy by its easiness of application. It

may be proposed, for instance, to make length the important element for determining freeboard. Length is, indeed, an important element, but to make it the sole or chief point of consideration is likely to be quite as misleading as to neglect it altogether. In our number for March, 1874, we discussed a proposal of Mr. Robert Duncan's to base freeboard upon the sum of the length, breadth, and depth, which, considering the relative smallness of the two latter dimensions compared with the former, amounts to nearly the same thing as a percentage of length. From the conclusion that ships with great length require more freeboard than others, it is with many only a very short step to the conclusion that length should regulate freeboard. To do this would be to encourage the building of short ships, as will be readily seen from the consideration that a ship of the old collier shape, having a length of but five times her depth, would be required to have little more than half the freeboard which would be exacted from a well-designed modern sailing ship of the same depth, but having ten depths in length. Fixing the ratio of freeboard to length so as to give a proper freeboard for the first, and then applying the same ratio to the second, we should in some cases arrive at the astonishing result that the fine ship would carry no cargo at all, but her light-line would also be her load-line. Somewhat more reasonable than this would be an arrangement by which freeboard would be regulated by requiring for ships of increasing length an increasing number of inches per foot-depth of hold. Thus, if two inches to the foot were required at 200 feet length, $2\frac{1}{2}$ should be required at 250, $2\frac{1}{2}$ at 300, and so on. In considering the merits of a rule of this character, we should endeavour to ascertain first why increased length demands increased freeboard. For two reasons it may be said:—Firstly, that with great length in proportion to depth, increased strains are brought upon the structure. This, we think, is only of partial application, if there be increased strength put in the ship to meet the increased strain, it would be unfair to require also more freeboard. We may take it that the more important reason is, that a ship among waves requires to have more freeside for great length in order that she may go over instead of through them. It is obvious that the *increase* for this purpose should be in direct proportion to length, and the rule we are now considering would, in two long ships, give a greater increase to the deeper of the two, for excessive length, than to the other. Either way of dealing with the question leads in extreme cases to absurdity, and of course, long before manifest absurdity is reached, injustice may be inflicted. We conceive a less objectionable rule, and indeed the best rule, if only depth and length be considered, would be something like this:—Let a minimum freeboard be required of say two inches to the foot depth of hold for sea-going steamers, and two inches to every ten feet of length: in a very long ship, freeboard would depend upon the

latter, in a very short ship, upon the former. We suggest this as being less open to objection than any other rule built upon so slender a basis as length and depth alone. To consider these two dimensions only, is absurd. Any rule based upon only two dimensions would encourage the building of unmanageable *tubs*, unable to keep off a lee shore in a gale.

In former articles we have considered at length the many rules which have been proposed for regulating freeboard; their number and diversity is surely a strong argument against the adoption of any of them. Some take only one element of the question into consideration, and may be expressed in a single sentence, others have professed to consider every circumstance of the case, and page after page has been filled with closely printed figures, and after much multiplying and dividing, an inch has to be put on for one thing, and one per cent. taken off for another consideration, and put on again to meet a third, and after all a very faulty result is obtained. We have no nostrum of our own to prescribe; we have no short and easy rule for settling what so many have tried and have ignominiously failed to settle. It may be said that any one of the rules which has been proposed is of some use if *modified by judgment*, that is, would be of use to a shipowner wishing to determine his own freeboard.

We are thus brought to the consideration of the recent proposal embodied in a Bill by Mr. Norwood, that every shipowner should be required to mark his own load-line. This idea is an old one; we have more than once heard it expressed in public during the early stages of the load-line agitation. Mr. Norwood proposes to carry it out thus:—

“The scales of feet amidships shall be marked on one side of a vertical line, to be marked at a distance abaft the stem, equal to one-half the ship's length, and on the other side of the vertical line shall be marked a circular mark or disc, six inches in diameter. The centres of each of these circular marks or discs shall indicate the maximum load-line in salt water, down to which the owner, having regard to the construction and employment of the ship, claims to be entitled to load her.”

Then it is provided that a statement of the position of this mark be entered on the certificate of registry, and in the articles of agreement (if any) with the crew, and also that the owner may, on the completion of a voyage, and before entering into articles with a new crew, alter the position of the marks, “not less than twenty-four hours before the ship takes in cargo,” having the alteration endorsed on the register. If it be determined to have a load-line marked, we think the responsibility of marking it should be imposed upon the owner of the ship, he being the person whose business it is either to know all about his ship, or to employ some one to do so. We must say, however, that we still see grave difficulties in the way of any marked load-line at all, and we think that as this, or any

plan is carried out in practice, they will become more formidable than is anticipated by the shipowners, who now seem to wish for a marked load-line. Provision is made in this Bill for altering the load-line. How often is it contemplated to alter it? A ship sails from the Tyne for the Mediterranean in March, and then in June takes a cargo of coals to London, afterwards sailing with iron for the Baltic. Is her load-line to be altered for each occasion? If so, it may become the rule to pay the crew weekly wages, and change the mark every voyage. If not, which maximum is to be *the maximum*—the summer coasting mark, or winter Bay of Biscay mark? One often will mean unseaworthiness, the other great loss to the owner, higher dividends to proprietors of railway stock, and an increase in the already high price of coals to the London householder.

The Board of Trade has at present power to stop overladen ships; we cannot conceive that they will consent to surrender them, merely because a mark shall be put on his ship by the shipowner. That mark must be evidence merely of the intention of the owner to load his ship, and the question of overloading can, by its aid, be settled before the ship takes in cargo. We think there must be, then, as now, this distinct division of duty and responsibility: the shipowner to fix his mark, it being his business to know all about his ship, and to be responsible for her; the Board of Trade to have power, when they see a mark showing so little freeboard as to involve danger to human life, to step in and insist upon its being placed higher; the shipowner to be left alone to do his own business; the Board of Trade left free to prevent wrong-doing. The honest shipowner will do his work honestly, not fearing any harassing interference. We can well understand that, on the other hand, the man who wishes to be dishonest, finding that he must submit to some restraint, will like his freeboard to be settled for him, and strive thereby to obtain an officially sanctioned cloak to cover his dishonesty. It might be difficult to obtain it; but for him it would be worth the trying.

If the owner of a ship fix his own load-line, would it not then be a good thing to offer an inducement to him to give his ship good freeboard by only charging him tonnage dues on the displacement between the two, and thus at once settle two important questions—freeboard and tonnage. The tonnage question is in almost as unsettled a state as that of freeboard. A Bill was brought in last year by the Government to introduce some much-needed improvements into the tonnage laws, but was so cut about by a Select Committee to which it was referred, that its authors hardly knew their own child, and gladly abandoned it. Would it not be a good thing to wipe out all the past, and start *de novo* with tonnage on a new and just basis, at the same time settling freeboard? Then, too, the difficult question as to allowance for propelling power could be equitably

settled. Let a ship have all her machinery and fittings on board, mark her light-line, let her owner fix her load-line, measure the content of the space between the two, and call that the nett register tonnage. We conceive that a reason which was once urged against displacement tonnage would no longer have much importance attached to it. It was considered an essential feature of the Moorsom system of tonnage measurement, that, in consequence of the measurements being taken inside, the method could be so far simplified as to admit of its being carried out by ordinary Customs' Surveyors, under the directions of a small professional staff at head-quarters in London. The operation of measuring the outside volume of a ship is, however, a matter of some greater difficulty, and would require to be performed by professional draughtsmen. This, however, we do not suppose, would stand in the way of its adoption, now that the measurement is directly under the Board of Trade. A much stronger objection is the fact that English tonnage has become the basis of the tonnage systems of nearly all the civilised nations of the world. However they may differ in measurement of engine-room and in some minor details, France, Denmark, Sweden, Germany, the United States, Austria, Italy, and Spain, all have adopted the main features of the Moorsom tonnage, and it is understood that Norway, Holland, Russia, and Turkey are likely to follow their example. English register tonnage, too, as most of our readers know, is the basis upon which the rules have been framed for Suez Canal tonnage. Some very cogent reasons would have to be shown before any Government could undertake to disturb such a wide-spread system as we have thus described.

If tonnage had to be settled now for the first time, it is possible that the basis of assessment might be somewhat altered, but not, we conceive, in the direction of a dead-weight tonnage. There are two principles which, we believe, would guide the framers of a system of tonnage measurement not hampered by the past. In the first place, they would endeavour to levy taxes upon shipping in proportion to the accommodation supplied, and for which the ships are taxed; and, secondly, the system of practical measurement would be so devised that it should be impossible to evade it by any alteration of form. The second of these considerations is the basis of the present rule of English tonnage measurement, and every one agrees that it has been well kept in view, at least, so far, as regards gross tonnage measurement. In considering the accommodation which ships pay for, the first place must be given to dock charges, light and harbour dues being inconsiderable in comparison. A ship, we conceive, should pay dock dues in proportion to the space she occupies when in dock, considering her length, breadth, and depth in the question. It would not do to charge her upon the product of the

three dimensions, because then there would be a temptation to alter the forms of ships to suit the law; but gross tonnage, that is, the cubic content of the whole ship, appears the most equitable basis. In connection with such an assessment, it would, of course, be fair to charge only for the actual time during which the space is occupied. However, as the Acts under which dock charges are levied do not take this exact account of time, it would be unfair to alter the existing arrangement unless the whole legislation affecting the subject could be concurrently revised, and this appears almost impossible.

There are, however, some very good reasons against dead-weight tonnage. Ships do not pay their owner in proportion to the dead-weight cargo they can carry. Some are used chiefly in the conveyance of light goods, and if dead-weight were the basis of assessment they would have ballast worked in to the permanent structure. Others are employed in passenger traffic, and consequently carry less dead-weight, but are not, for that reason, less remunerative. On these grounds, we cannot think that Government will see their way to assenting to an alteration of the system of tonnage measurement with a view to ease off the infliction of a compulsory load-line.

We are glad to see from the debate on the second reading of the Government Bill, that the line of demarcation between the two methods of dealing with overloading and unseaworthiness generally, has been so clearly drawn. We firmly believe that a systematic Government *direction* of the loading of ships, although it might produce a temporary benefit, would in the end lead to worse evils than exist at present. Let the shipowner be held responsible for the condition and loading of his ship. enforce that responsibility by compelling him to state beforehand how deep he intends to load her, if that be necessary to the end in view, but let the Government sanction and certify nothing, their proper function being to interfere to prevent danger to human life, and to punish those who wilfully cause such danger. Only by their hands being kept free can they do this effectually.

THE PROTECTION OF THE FLAG.

IT has been so much the fashion of late years, amongst a certain class of politicians and public writers, to decry the British flag, and to speak of the protection it is supposed to afford to British subjects and British interests abroad as a thing of the past, that it is satisfactory to be able to refer to a few facts which furnish the best answer to imputations easily made but utterly groundless. It is true that British subjects who have engaged in hazardous if not illegal enterprises during periods of hostilities, or in reckless speculations in foreign States, have properly been left to bear the consequences of their own acts. These risks have been entered into with a full appreciation of their character, and it would never do if those who have thus played a game and lost it should be entitled to claim the assistance of their Government to recover their stakes. This would involve an abuse of the power and resources of the country which could never be tolerated, and adventurers who have lost ventures, however heavy, in running blockades or in supplying war material to belligerents, have been content to put up with the loss, unless where some point of prize law has been raised and decided in their favour, and they have claimed to be entitled to the benefit of such decision. Very different is the position of those British subjects who have suffered wrong at the hands of the civil or military authorities of foreign States, and very different the light in which such wrong is regarded and dealt with by Her Majesty's Government. We may cite a few cases of comparatively recent occurrence. In the early part of November, 1873, a number of British subjects and American citizens, seized in a vessel named the *Virginus* on the plea that they were engaged in an attempt to aid the Cuban insurgents, were taken into the port of Santiago de Cuba, and there butchered in cold blood. The Government of Washington and Her Majesty's Government lost no time in inquiring into the facts of the case, and in preferring demands for compensation. The Spanish Government naturally endeavoured to avoid a liability in which they had been involved by the act of a bloodthirsty commandant at a distant station in an insurgent possession. But the demand for compensation was calmly but resolutely insisted upon. The money terms were £7,700 to be paid on behalf of the representatives of the British victims, and 80,000 dollars to the Americans. The entire of the latter demand and £6,000 of the former has actually been paid over to their respective Governments, and the balance of £1,700 will shortly be in the hands of Her Majesty's Government for distribution. In the course of the

last year two outrages, differing in degree, were committed on British subjects: the one in Chili, the other in the Central American State of Guatemala. A ship named the *Tacna*, commanded by Captain Hyde, a British subject, had capsized in the course of a coasting voyage in Chilian waters, and drowned some Chilians. A Court of Inquiry found that the ship had been improperly stowed, or carried too much deck cargo. The Chilian authorities caused Captain Hyde to be seized, dragged through the streets of Valparaiso, and thrown into a felon's cell; all this before any trial had taken place, or Captain Hyde even been arraigned. The matter was taken up earnestly by the British Representative at Valparaiso, and a demand for no less than £20,000 was preferred, a course of procedure which has, we believe, met with the approval of Her Majesty's Government. At the little port of San José, in the State of Guatemala, the British Consul, Mr. Magee, had in some way incurred the ill-will of a drunken maniac, Gonzales by name, who commanded the local contingent at that place. Mr. Magee was seized by order of this Gonzales, and beaten nearly to death; indeed, it seems almost miraculous that he could have survived the horrible treatment he experienced. For this outrage the Republic of Guatemala has been compelled to pay the sum of £10,000, and to salute the British flag. Not long since, a British vessel, named the *Mermaid*, bound from a Welsh port to Venice, with a cargo of lawful merchandize, was fired into when passing the Spanish fort of Ceuta, and sunk. The facts were investigated, a demand for compensation was preferred by our Government, and a sum of £3,900 was eventually paid over to the parties interested in ship and cargo. Very recently the Spaniards, under pretence of protecting the revenue, have seized vessel after vessel leaving the port of Gibraltar bound to Tangier and other ports out of Spain, and have taken them to the port of Algeciras, where, after examinations before a Prize Commission—a novel method of dealing with cases of alleged smuggling—the property has been restored, without any reparation for the detention and loss of voyage, &c. These outrages have been made the subject of a formal representation to the Spanish Government; and the views and intentions of Her Majesty's Government, should they be repeated, have been so very clearly conveyed, that we venture to think we shall not hear that they are repeated. The Spaniards have long sought to justify seizures made at a distance of even seven miles from the land on the plea of having a right to a maritime territorial of that extent, a plea which this country has never admitted, and probably never will admit. We cite these cases, the most recent which have occurred, to show that the British Government are quite alive to the claims of British subjects or their representatives wherever a wrong has been committed, and are prepared to enforce them. This is a duty which Her Majesty's advisers, whatever the Administration

in power, will not fail to perform. The taunt of a strong power abusing her strength has lost its force ever since it has become apparent that weak States have a tendency to abuse their weakness. The broad and intelligible principle of our foreign policy in this regard is, that the subject, so long as he is himself a law-abiding and inoffensive person and engaged in the pursuit of an innocent trade, is entitled to the protection of his flag and can claim that protection wherever he may be, and our most recent experience of the action of the British Government teaches us that no such appeal, if properly founded, is ever likely to be made in vain.

FROM OTTAWA TO NEWFOUNDLAND BY WATER.

By WM. SMITH, ESQ., DEPUTY MINISTER OF MARINE OF CANADA.

FEW people outside of Canada, with the exception of those who have visited it, can form any idea of the extent of the water communication in the immense territory of the Dominion, or of the great facilities afforded for travelling on its vast lakes and rivers during the season of navigation. Not the least important amongst the latter is the Ottawa or Grand River, having its source in the waters of Lake Temiscaming, amidst the solitudes of the forest, whence, flowing south-easterly through a wild expanse of scenery, and acting as the boundary line between the Provinces of Ontario and Quebec it passes the city bearing its name, now the seat of the Federal Government, till after a course of some 450 miles, it mingles with, and tends to swell, the waters of the mighty St. Lawrence, a few miles west of the Lachine Rapids. Commodious steamers ply on the Ottawa River between the Capital and Montreal, a distance of some 120 miles, whilst on the Upper Ottawa, as that portion of the river is styled, westward of the city, relays of steamers traverse each navigable stretch of its waters, the numerous rapids preventing direct navigation, for a distance of over 250 miles. About half-way between Ottawa and Montreal, the Long Sault Rapids, extending some twelve miles, necessitate for freight boats the use of the Grenville Canal, whilst passengers are transferred by rail to Carillon, at the foot of the Rapids, where another steamer is waiting for them. This canal, which belongs to Government, is now being enlarged, and will be available for passenger steamers without transshipment in a year or two.

On the morning of the 21st of July last I embarked at 7.30 a.m. on board the steamer *Peerless* of about 500 tons register, as fine a boat as

floats on the inland waters of Canada, Commander Captain Bowie, one of the owners of the line, and one of the most attentive and gentlemanly captains in the Dominion. Steaming down to Grenville, and taking train thence to Carillon, I stepped on board the *Prince of Wales*, ran the St. Anne's Rapids, rendered famous by Moore in the "Canadian Boat Song," and arriving at Lachine at 5.30 p.m. was transported thence by train to Montreal, which was reached half-an-hour afterwards. The owners of the Ottawa line of steamers also run a night-boat each way, and in coming down their boat runs the Lachine Rapids, and lands the passengers at the wharf at Montreal. Between Ottawa City and Montreal we pass ten river lighthouses and two light-ships all maintained, as is always the case in Canada, by the Federal Government, out of the general revenue of the country, there being no light dues or tax on shipping for the support of this branch of the public service. On the waters of the Upper Ottawa there are also three lights, making in all fifteen on this river alone.

At Montreal, which may be termed the commercial metropolis of the Dominion, with its fine harbour and wharves crowded with large ocean steamers and shipping, I took passage for Quebec on board a steamer of the Richelieu Company's Line, one of which leaves Montreal every evening at 7 p.m. during the summer. Two boats of this line the *Quebec* and *Montreal* are the largest and most powerful of any steamers running on the inland waters of Canada, carrying easily between 300 and 400 passengers, for whom everything in the way of comfort is provided. The distance between Montreal and Quebec is about 180 miles, the fare for which, including an excellent supper and sleeping berth, is only four dollars, or 16s. 8d. sterling. Opposition has reduced this, the general fare, at one time as low as one dollar, but such opposition never continues for any length of time, a compromise being either effected, or the opposition line being run off. As the steamers of the Richelieu Line draw only nine or ten feet of water, they need not adhere closely to the artificial channel which has been dredged in many parts of the St. Lawrence for the accommodation of ocean steamers which draw twenty-one feet. The growing trade of Canada, and the enterprise of its shippers, merchants, and shipowners, demand a channel of a still greater depth, and preparations are now being made to enlarge it to twenty-four feet, by the Montreal Harbour Commissioners, under the direction of Government, which has undertaken to borrow 1,500,000 dollars for that purpose.

Whilst the mercantile and shipping interests of Montreal have been exercising themselves to improve the navigation of the river below Montreal, and in the harbour itself, so as to secure the advantage of being the chief shipping port of the Dominion, Quebec has also been striving to secure a portion of the advantages which will accrue from

making the St. Lawrence the great water highway to the West. A new Harbour Commission has been organised in Quebec, and many much-needed improvements are to be at once commenced. There are large nests of anchors and chains in the harbour, the accumulation of years, and suitable barges and machinery are now being got ready for the purpose of recovering them. A large new graving-dock capable of taking in vessels of the largest size is shortly to be built, and Sir Hugh Allan, on behalf of the Montreal Ocean Steamship Company, which he represents, has just made arrangements to build a large deep-water wharf at a cost of about 100,000 dollars.

The lighting of the river between Montreal and Quebec was formerly entrusted to the 'Trinity House' of the former city, but that body was dissolved last year by an Act of the Canadian Parliament, since which time the management of the lights has been entrusted to the Department of Marine and Fisheries, which has the management of all the lights in Canada, numbering upwards of 320. Between the two cities there are forty-one lights, including the three light-ships on Lake St. Peter. Many of these lights are of a minor description, suitable for the navigation of the river.

From Quebec I proceeded to Halifax in the mail steamer *Austrian*, of the Allan Line, which carries the Canadian mails between Liverpool and Quebec during the season of navigation, and which use Portland in Maine as their harbour during the winter months. The Messrs. Allan also run a line of steamers between Glasgow and Canada, but at a lower rate of speed than their mail boats. They also convey the mails between Halifax, St. John, Newfoundland and Liverpool, receiving for such service a subsidy from the Government of Newfoundland.

The captains of these boats are selected with great care from among the officers of the Line, and are all men who have proved themselves capable whilst in the capacity of subordinate officers of taking command, and it would probably be difficult to find a more attentive and efficient body of men afloat than the officers of these vessels. Captain Ritchie, of the *Austrian*, in which vessel I sailed, is the very personification of a seaman, and although a young man of a genial disposition, he appears to have all the prudence and caution of the most experienced sailor, scarcely ever leaving the bridge whilst in the vicinity of land. The navigation from the St. Lawrence to Halifax, and thence to St. John's, requires the most careful attention owing to the prevalence of fog and the danger of meeting icebergs.

On leaving Quebec a pilot takes charge of the steamer as far as Father Point, a distance of some 175 miles, when the captain assumes command, which he retains till the coast of Nova Scotia is reached in the vicinity of Halifax, where another pilot is taken on board to bring the vessel into

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that harbour. The above route has of late years been much improved by the establishment of a number of new lighthouses. Five new steam fog-whistles have also been established since 1867 on this route, which have been found very serviceable during thick or foggy weather. The most prominent improvements on that route since Confederation, are an additional light-ship at the Traverse, below Quebec, a new light-ship and steam fog-whistle at Red Island Reef in the St. Lawrence, new light-houses at Matane, Metis, Cape Chatte, River Magdalen, South Point, Anticosti (where a steam fog-whistle has also been erected), new lights at Bird Rocks and Magdalen Islands, with a steam fog-whistle at Etang du Nord, and one on St. Paul Island. The Bird Rocks light has proved most useful and valuable to mariners, as it is a powerful French dioptric fixed white light, and can be seen in a clear night a distance of twenty miles, thus enabling a navigator to take his vessel in close proximity to the rocks without danger. Our steamer passed this light in the night, and Captain Ritchie spoke to me in the most enthusiastic terms of its value. As he was afraid of fog in the Gut of Canso, we took the route N.E. of Cape Breton, passing between St. Paul's Island and Cape North. A superior new revolving white light has recently been placed in the neighbourhood of the latter Cape, which will be lighted on the opening of navigation in the spring of this year.

On Sunday morning, the 26th July, we approached the entrance of Halifax Harbour, and commenced a look-out for a pilot, who soon made his appearance, and took us safely in, despite a thick fog which prevailed. Some time ago, a powerful revolving white light was erected at the Chebucto Head, at the entrance of the harbour, which has proved of immense benefit to navigation, and many of the pilots and seafaring men of that port informed me that a steam fog-whistle was much wanted at that place.

The pilot system at Halifax has not hitherto been a good one, owing to the fact of there being upwards of ninety persons licensed as pilots for that port. As a natural consequence, all could not make a living, and so they were obliged to resort to fishing, with the chances of meeting a vessel while so engaged, requiring pilot service. Under the new Pilotage Act, lately passed by the Dominion Legislature, a proper pilotage authority has been created, composed partly of nominees of the Government, and partly of men elected by the Chamber of Commerce and the City Council. These commissioners now propose to reduce the number of pilots to twenty, selected by competitive examination, and to compel the use of safe decked-boats capable of use outside the harbour, and to forbid them engaging in fishing.

The harbour of Halifax is one of the finest in the world, very rarely freezing over (although this winter has been an exception), and is easy of approach in clear weather; in foggy or thick weather, however, entrance

to it is not so easy. Formerly one of Daboll's fog-trumpets, worked by a caloric engine, was used on Sambro Island, off the harbour, but it had to be discontinued owing to its imperfections. On the recommendation of the Minister of Marine, a sum of £30,000 was voted by Parliament, three years ago, to provide a light-ship with a steam fog-whistle, to be anchored outside the harbour, where it was thought it would be more useful to vessels making that port than on Sambro Island. In accordance with that vote, an iron light-ship was procured from England, and, after its arrival, was fitted up with a fog-whistle and moored in position in November, 1873; but it was very soon ascertained that either the vessel was too small, or the weather too severe for her in such an exposed position during the winter, thus necessitating her removal within the harbour in a very short time, the crew fearing she would founder at her anchors. Another sum has now been voted to re-erect a steam fog-whistle on Sambro Island, and arrangements are in progress for the construction of the most powerful fog-whistle which can be made, on that dangerous and exposed island.

The buoys in Halifax Harbour have hitherto been placed and maintained by the British Admiralty, from the fact of their being necessary for the safety of the British ships of war frequenting that harbour during a large portion of the year. As these buoys were found to be too small for the rapidly increasing trade of Halifax, the Canadian Department of Marine brought the subject under the notice of the Admiralty, but their Lordships were of opinion that the time had now arrived when the Canadian Government should undertake this service. This proposition was willingly acceded to by the Canadian authorities, and the buoyage of the harbour is now under the management of the Marine Department here, which will make the necessary arrangements in the spring to improve this important harbour, as far as its buoys are concerned, with the exception of that portion of it reserved for ships of war, which will remain under the management of the Admiralty. Preparations are now going on for placing a light on George Island, and to improve that on Devil's Island; this will go far to facilitate the navigation of the harbour.

On Tuesday, the 28th July, at noon, the *Austrian* steamed out of her dock at Halifax for St. John's, Newfoundland, and Liverpool, with about fifty cabin passengers and a considerable number in the steerage, nearly all of whom were destined for England. During the two following days we were nearly the whole time enveloped in a dense fog, the captain remaining on the bridge the greater portion of that period. Nothing could exceed the care and watchfulness of himself and officers while thus befogged, knowing as they did that icebergs were at hand—a most dangerous obstruction in this quarter, even in the middle of summer. When off

Cape Race, the fog became so thick that the captain decided to stop the engines till he could define his position. This occurred at noon, but at 2 p.m. the fog lifted sufficiently to sight the land, thus enabling us to proceed, and at seven o'clock the same evening we steamed into the harbour of St. John's, having taken a pilot outside; at eight o'clock, we were moored to the wharf, having made the run from Halifax to St. John's in fifty-six hours, including the detention by the fog.

The new steam fog-whistle at Cape Race proves of great benefit to passing vessels, as the lighthouse on that point is frequently obscured by fog in summer, and snow storms in winter. With a favourable wind, or in calm weather, it can be heard from ten to fifteen miles distant; but in stormy weather, or with a contrary wind, it cannot be depended on at more than three miles distance. The coast of Newfoundland, between Cape Race and St. John's, appeared, as we steamed past it, rocky, barren, and mountainous, and in the event of a vessel being driven ashore there during heavy weather, the chances of escape for the crew would be but slight. On the coast, we passed a number of icebergs, some gradually making their way from the Arctic regions to the Gulf Stream, where they break up and disappear, whilst others lay stranded amongst the rocks along the shore, waiting for a favourable wind, blowing them off the land, to enable them to continue their journey southward.

The harbour of St. John's is land-locked and well protected, having a very narrow entrance, although not so large as that of Halifax or Quebec, but probably about the same size as St. John, N.B.; it can accommodate a large fleet of shipping. The pilots, who are all more or less connected with the fishery, only go a short distance outside the harbour, and use open boats similar to those at Halifax.

On the arrival of the *Austrian* at her wharf at St. John's, I was met by Capt. Shea, R.A., *aide-de-camp* to his Excellency Colonel Sir Stephen Hill, the Governor, who had previously extended to me an invitation to take up my quarters at Government House. Having been the guest of Sir Stephen during a visit I made to Antigua, in 1866, where he was then the Governor, and where he was as popular as he is in Newfoundland, for his genial and amiable qualities, I again availed myself of his hospitality. Lady Hill, who is a daughter of the late Chief Justice of Antigua, ably assists His Excellency in maintaining the reputation he has acquired as one of the most popular Colonial representatives of Her Britannic Majesty. The merchants of St. John are celebrated for their hospitality to strangers, and make visitors to the island heartily welcome. The city is remarkable for possessing neither a mayor nor town council. Its police, which are available for service in any part of the island, are maintained by Government; they are a fine body of men, uniformed

something like the Rifle Brigade, and commanded by retired officers of the British Army. The people of the island seem opposed to Confederation with Canada, thinking it would increase their taxation. The members of the Government now in power there, are, personally, rather favourable to Confederation, though, as a Government, they cannot bring the matter up, as such a proceeding would probably throw them out of power. An idea, however, is gaining ground that Confederation might be carried if the Canadian Government agreed to build a railway across the island, in addition to the terms already proposed, and thus make it the western terminus of the Atlantic steamers—an event which sooner or later must come. The Canadian Government, however, with its large obligations now incurred for public works, is not in a very favourable position to enter into further extensive liabilities at present, and so, probably, Newfoundland will remain isolated for some years to come.

The distance by water of St. John's, Newfoundland, from Ottawa, *via* Halifax, may be stated at about 1,600 miles, but it would be, of course, much less if we had steamed direct from Quebec to St. John's.

			Miles.
From Ottawa to Montreal it is about	...	...	115
„ Montreal to Quebec „	...	...	180
„ Quebec to Halifax, by St. Paul's	...	...	775
„ Halifax to St. John's	...	...	530
			<hr/> 1,600

I will now give a general sketch of the island, and some facts concerning it, as it is not a country which has been much visited by travellers, or which has been prominently noticed. Newfoundland possesses naturally a commanding geographical position, being, as it were, a stepping-stone between the Old and New World. Stretching across the entrance of the Gulf of St. Lawrence, to which access is afforded both at its northern and southern extremities, it also stretches out towards Europe, on its eastern shore, nearer than any other portion of America, the distance to the west coast of Ireland being about 1,640 miles. The Straits of Belle Isle, fifty miles long, and about twelve broad, separate its northern extremity, which narrows considerably from Labrador, whilst its southern portion, extending from Cape Race to Cape Ray, lies at a distance of fifty-six miles from Cape North, the northernmost extremity of Cape Breton. Between these headlands is the great highway to the St. Lawrence, during the spring and fall months of the year, the direct route from Europe for Canada and the Great West. Newfoundland must thus for ever be the key to the navigation of the Gulf and River, and whatever country owns this, the bastion of North

America, must command the power over the commerce of the whole of the North Atlantic.

During the months of July to November, the ocean mail steamers, between the St. Lawrence and the United Kingdom, use the Straits of Belle Isle, which shortens the voyage about one day.

The greatest length of the island is 420 miles, and its breadth 300, with a computed area of 88,000 square miles. It is about one-fifth larger than Ireland, and one-fourth larger than Scotland. It possesses a population of about 150,000, scattered along its 1,000 miles of coast line, who subsist chiefly from the products of the sea, the interior being left as yet unsettled, and, comparatively, unexplored. The great ignorance that has hitherto existed concerning this, one of the oldest of Britain's colonies, may be attributed to its isolation, its scant population, and to the restricted character of its products and its commercial relations. Celebrated in England for its codfish, its fogs, and peculiar breed of dogs, and as the first resting place of the Atlantic Cable on the American shore, little else is there known respecting it.

The early history of Newfoundland has to a great extent been lost sight of; but history tells us, that on the 24th June, 1497, Sebastian Cabot, in a vessel hailing from Bristol, discovered the eastern shore of the island, which he called Bona Vista. For a whole century afterwards nothing was done by England in the way of colonizing it, though its fisheries were known to be frequented by the hardy fishermen of Brittany and Normandy. Seven years after Cabot's discovery, French, Spanish, Portuguese, and English, were engaged in the fisheries; and in 1578, we are told as many as 400 vessels were engaged in this business. England, about that time, took formal possession of its shores, and in 1583 the formation of a colony was attempted by Sir Humphrey Gilbert, who was lost in a storm on his return voyage home, his vessel being only of about 10 tons. In 1610, the first actual settlement was made, which was succeeded a few years afterwards, by Lord Baltimore's expending a large sum of money for the purpose; he, however, having selected an unfavourable spot for settlement, and being harassed by the French, gave up the attempt, and founded the State of Maryland instead. Emigrants from Ireland slowly added to the population, which only amounted in 1650 to some 2,000 souls, though a much larger floating population might be counted during the fishing season. Settlement was retarded through a shortsighted idea that such would retard the prosperity of the fisheries, large grants of land being only permitted for curing fish and the spreading out of nets. About the year 1728, local civil government began to exercise its authority, but it was not till 1792 that a state of order and civilization was arrived at by the establishment of a Supreme Court of Judicature. In 1811, the restrictions on cultivating the soil

were removed, in 1832 representative Government was secured, and in 1855 responsible Government was inaugurated.

In early times fabulous stories were circulated about the climate, but their falsity is now clearly proved by the statements of reliable residents. That it is enveloped in fog the greater part of the year is quite a mistake, arising from the fact, that far out at sea, where the cold Arctic current meets the tepid water of the Gulf Stream, fogs are very prevalent, but Newfoundland itself is freer from fog than either Nova Scotia or New Brunswick. It is only on the south and south-eastern coast that fog is met with, and that only in summer, the rest of the island being very seldom visited with it. This is stated on the experience of Professor Bell, who adds, that "the fog may be seen at sea like a huge wall of vapour, though never extending inland." Of this I had a practical proof myself, for while we were enveloped in fog a few miles from the shore, when we steamed into the harbour we found it fine clear weather, and I was assured by the Governor that this was a common occurrence, thick fog outside, and fine clear weather on shore. The Gulf Stream washing its shores mitigates the severity of the climate, the thermometer seldom falling below zero in winter, and that only for a few hours. The intense cold and fierce heat of Canada are unknown, from its insular position, and the result is evident from the robust health of its inhabitants.

The whole coast line of 1,000 miles is indented with splendid bays and harbours. The city of St. John's is situated on a peninsula, known as Avalon, separated from the rest of the island by Placentia and Trinity Bays, and joined to it by an isthmus only three miles wide. St. Mary's and Conception Bays further subdivide this peninsula, and St. George's Bay, forty miles wide at its entrance, Bay of Islands, and numerous other arms of the sea, stretch far into the interior of the land. Trinity Bay, the landing place of the Atlantic Cable, is ninety miles long. In the interior of the island, extending through its centre, is a magnificent chain of lakes, one of which, Grand Pond, is sixty miles long, and another, Indian Lake, is thirty miles in length, both abounding with salmon and other fish.

In consequence of the inhabitants devoting their attention principally to the fisheries, agricultural pursuits and the cultivation of the soil have been greatly neglected, although a large farming population might carry on a prosperous business, the land being, in many instances, far superior to some of the older farming districts in the maritime provinces. In the neighbourhood of St. John's more attention has recently been given to agricultural pursuits than formerly, and there are now many thriving small farms which look as well as anything to be seen in the maritime provinces of Canada. Nearly three-fourths of the population are concentrated on the Avalon peninsula, devoting their attention principally to

fishing, and as this is the most barren part of the island, the soil resting on hard slate rock and covered with boulders, a stranger visiting Newfoundland, who seldom goes to any other part of it, is apt to draw an unfavourable conclusion of the capabilities of the land from the appearance of this portion, and the consequent apathy of its residents in agricultural matters. Yet even there, gardens produce luxuriantly when properly tilled, root crops arriving at the highest perfection, and fruit trees yielding well. The same kind of soil prevails along the north-east coast, but at the heads of the bays with which it is indented, large tracts of rich alluvial land are met with, well wooded, but easily cleared, and yielding abundant returns to the husbandman. So far, only a few agricultural settlements occur around the coast, and there is ample room for settlement for years to come. At all the fishing stations there seems to be no want of manure for agricultural purposes, as I saw large quantities of heads and entrails of fish being carted from the fish-houses to the fields, where, I was informed, it made an excellent compost, although the smell was anything but fragrant.

The western portion of the island is destined some day to be a great agricultural district, possessing, as it does, a fertile soil and fine climate. Some years ago, the Surveyor-General of the Island visited that part of the country, and reported most favourably on its capabilities. Clothed to the water's edge with a thick covering of foliage, the appearance it presents is beautiful in the extreme. There is a tract of some 70,000 acres between the Great and Little Cod Roy Rivers, which consists of a rich loam, with large deposits of gypsum, but almost nude of settlers. The soil around St. George's Bay is deep and rich, and the Surveyor-General estimated that tract alone as capable of supporting from 100,000 to 200,000 persons. Fine timber is also abundant—birch, pine, spruce, and larch, in quantities sufficient both for shipbuilding and export. Fog is rarely seen, and cold easterly winds are never felt. An officer of the geological survey, who visited the western coast, says of it, "Independently of its agricultural capabilities, this fine tract of country seems to present inducements for other branches of industry and enterprise; water-power to drive machinery is everywhere attainable." The present settlement of this fine region is limited to some straggling farms along the coast, on which cattle and sheep are raised; and dairy produce of the best description is obtained. Rich and inviting as this district is, it only awaits the industrious agriculturalist and the sturdy lumberer to develop its resources, whilst below its surface is abundance of mineral wealth.

Of the interior, comparatively nothing is known, the only account of it from an eye-witness being given by W. E. Cormack, Esq., a Scotchman, who, attended by a single Micmac Indian, crossed the island from

Randour Sound to St. George's Bay. It took four months to accomplish this journey, during which time he supported himself on game, with which the country abounds, and tracks of deer, bears, wolves, foxes, &c., were met with in every direction. Vast plains, or savannahs, stretching as far as the eye could reach, traversed by rivers and lakes, beautifully wooded on their margin, bore a strangely similar appearance to the prairies of the west. The surface of these plains in many places was not interrupted by a single tree, or any inequality of ground for miles. Reindeer herd on them in countless numbers, attaining a very large size, and were found to be very fat. Here they roam, undisturbed by man for centuries past. The brooks in the basin of the interior were swarming with beavers, and stocked with flocks of geese, ducks, and other waterfowl. It is only a matter of wonder that the description given by Mr. Cormack has not induced an extensive immigration to such a magnificent country.

Valuable discoveries of minerals have been made in various parts of Newfoundland, but it is only of late years that mining operations have been started. The Union Copper Mine, at Tilt Cove, on the north-east coast is very rich, and a vein of nickel has also been found associated with the copper as the workings proceeded. The whole region south of Tilt Cove is metalliferous. A valuable lead mine was opened some years ago in Placentia Bay, and work there is carried on, though not on as large a scale as the yield of ore would warrant. Geologists predict the discovery of gold on Avalon Peninsula similar to that in Nova Scotia. Mr. Murray, of the Geological Survey, says, in his report on the island, "From the numerous indications presented at different parts of the Province of the presence of lead ore, we may fairly infer that it will, in process of time, become an important material among the economic resources of the country." That coal exists over a large district on the western coast is now fully ascertained, Mr. Murray estimating the area at thirty-eight square miles. The proximity of this to Canada, and its position making it available for steamers putting in there, makes this deposit of inestimable value.

The fisheries of Newfoundland are so well known as to require but little comment. "The Banks," the greatest submarine elevation in the world, occupying in the whole of their extent six degrees of longitude, and nearly ten of latitude, being over 600 miles long and 200 miles wide, with soundings varying from 25 to 150 fathoms, are the breeding place *par excellence* of the codfish, the most valuable to man of all the fishes that swim, as the stock appears inexhaustible. The probable origin of the Banks is from the waters of the Gulf Stream meeting those of the Arctic current, and producing a precipitation of all matter held in solution, a process daily going on; to this may be added

huge masses of rock and stone transported by icebergs, which, melting under the influence of the warm water of the Gulf Stream, here deposit what they transport, adding thus, year by year, to the shoals which will one day form a new continent or group of islands. To this "meeting of the waters" may also be attributed the fog so prevalent there. One great attraction for the cod in these banks is the large quantity of *infusoria* brought and deposited there by the Gulf Stream, which furnishes an attractive source of food. The fisheries on the Banks are carried on for the most part by French and Americans, the Newfoundlanders themselves, as a rule, only fishing on their own shores and on the coast of Labrador.

During the last few years the fisheries of Newfoundland have been very renumeration. To this may be attributed, to some extent, the indifference of its people towards linking themselves with Canada. Should a failure in this staple trade occur, public sentiment there may change, as public works and railroad enterprise would afford remuneration and employment to its inhabitants. The hardy fishermen of Newfoundland will always be subject to periodical difficulties, so long as they rely on that branch of business alone.

Another source of wealth, and one on which many of the islanders depend for their existence, is the seal fishery. This animal revels amongst the ice-fields drifted down from the Arctic shores, and the hunt on these "ice-meadows" is full of excitement and attended with the utmost peril. About the end of February or early in March, the sealing fleet, consisting now principally of steamers, leaves the harbours of Newfoundland in search of the ice-floes, on which the young seals are produced. On reaching these, the men leave their vessels as soon as seals are discovered, and they immediately despatch the young seals with clubs, the skin and fat alone being taken. Within the last few years screw steamers, strengthened and iron-plated on their bows for the purpose, have been employed with great success, and their advantage over the old sailing vessel is seen in the fact of their making two, and sometimes even three trips, returning with a full load each time. This, however, depends on their success in meeting with seals, as baffling winds not unfrequently send the ice too far off the shores, or render it inaccessible. When the seal fishery was at its height, the value of its produce realised nearly one million sterling in Europe; but as the demand for seal oil has given way before other burning fluids, its value now does not approach much more than half that sum. The fact of this fishery being carried on and finished before the cod or any other fishery commences, is a great boon to the islanders, who would otherwise at that season be comparatively idle. This fishery will probably not fail for years to come, as it is only a detachment of the great body of

seals that come down from their breeding places in the Arctic solitudes, and many persons acquainted with the trade are afraid that the wholesale slaughter of seals now going on, must eventually destroy it. This fishery ceases about the 1st of May, when a month's rest is taken by the fishermen, and they then resume their labours from June till October in fishing for cod, the women assisting on shore in the operation of cleaning and curing the fish.

During my stay in St. John's, I had an opportunity of witnessing the annual regatta, which takes place on Quidy Vidy Lake, near the city, and as may easily be imagined, the pulling was excellent, as nearly all the population are experts in the handling of boats. There was a large attendance of spectators, among whom were the principal ladies and gentlemen of the place, and I may add, that owing to the salubrious nature of the climate, the ladies of St. John's, Newfoundland, have long been noted for their good looks and fine complexions.

Having made a most agreeable visit to His Excellency the Governor, at St. John's, and to some of the principal citizens in that city, after a stay of six days, I left in the mail steamer *Caspian*, Captain Brooks, for Halifax, on the 7th August, 1874, and arrived back in Ottawa on the 21st of the same month, *viâ* Halifax and St. John, New Brunswick, with a pleasant recollection of my "Journey to Newfoundland by Water from Ottawa."

OUR COLONIES.—IX.

THE MINERALS AND METALS THEY YIELD.

IT is somewhat singular to notice that almost all our Colonies and Possessions beyond the seas are rich in mineral treasures; even in such as Newfoundland, where mineral ores were least expected to be found. In some, however, little or no progress has yet been made either in searching for or developing their mineral wealth. In others their mineral riches have been the chief attraction to draw population thither, as in the case of the Australian settlements, South Africa, and British Columbia. Attention has already been prominently drawn to the fossil fuel which is so largely developed in most of our Colonies, and we now proceed to touch upon the other important minerals and metals which they furnish to commerce.

To enumerate systematically and fully all these would be impossible within the restricted limit available, and we can only, therefore, discursively treat of them; but still relying upon recent and official data, we

shall be able to show how highly important and valuable these are both to the Colonies and to the Mother Country.

Even leaving out of question the quantity of gold received from our Colonies, the Board of Trade returns show that the various minerals and metals they supply us is valued at about two and three-quarter millions sterling.

Value of the minerals and metals imported from the Colonies in 1878:—

Copper ore from South Australia	...	tons	10,281	...	£236,626
„ „ Australia	...		1,765	...	25,678
„ „ British North America	...		6,781	...	67,521
Copper regulus from South Africa	...		846	...	50,210
Copper ore, wrought and partly wrought, }			251	...	22,720
from British India	...				
„ Australia	...		10,565	...	984,215
Gold ore from Australia	...		25	...	2,950
Iron, wrought, from British North America	...	cwts.	8,461	...	59,598
Manganese ore	...	tons	25,777	...	160,983
Metals unenumerated from Australia	...		75	...	4,510
Ores unenumerated from Australia	...		1,587	...	22,979
Plumbago from Ceylon	...		2,520	...	45,221
Tin ore from Australia	...		4,726	...	352,532
Tin, blocks, &c., from Straits Settlements }			106,103	...	717,871
and Australia	...	cwts.			
Zinc from Australia	...	tons	178	...	3,581
<hr/>					
£2,747,195					

When the vast value of mineral resources is considered, it becomes a matter of the utmost importance, particularly in a new country, that their existence should be ascertained, and their extent, variety, and character made known. The possession of valuable minerals is one of the richest endowments of a country, and without it no country can hope to take a place amongst the great and powerful nations of the world. To Englishmen, who of all others carry with them wherever they go the habits of active industry and commercial enterprise which have raised Great Britain to its position amongst the nations, it is a matter of necessity that the country in which they seek to erect another England should contain within itself those natural elements which are necessary for the support of commercial and manufacturing prosperity.

Gold in Australia was first discovered in New South Wales, and the actual search for the precious metal was commenced in 1851 in the western districts of the Colony. Seven years before that, however, Sir Roderick Murchison, without ever having been in Australia, predicted that gold would be found in the mountain chains which run from north to south of the Colony; and he went so far as to recommend the unem-

ployed miners of Cornwall to go out there and dig for it. Similar prognostications were made about the same time by the Rev. W. B. Clarke, the eminent geologist, who has resided in Sydney for many years. The discovery made at Ophir led to the finding of gold in the soil and rocks of the Colony over tracts many miles in extent. It is thought that mineral discovery in Australia, notwithstanding that so much has been accomplished during the last quarter of a century, is still in its infancy.

The proclaimed gold-fields, extending with short intervals the entire length of New South Wales, and westward about 200 miles from the coast, comprise an area of nearly 13,656 square miles, and number more than eighty distinct fields. Indeed, there is hardly a district in the Colony that has not been invaded by the digger, and made to contribute to the gold currency of the world. Gold has been found in the gizzards of fowls, and picked up in the streets of Bathurst. It has been brought up from the bottom of the sea off Port Macquarie by the sounding-line of H.M.S. *Herald*; it is distributed amongst the sands of the Shoalhaven shore, and it glitters among the pebbles which are strewn along the beach at the Richmond, so that the whole Pacific coast may be said to yield gold; and it is the opinion of men best informed on the subject that there are vast treasures of the precious metal in the alluvial lands along the remote western boundary of the Colony yet untouched.

The value of the gold produced in New South Wales, and exported from 1851 to 1861 inclusive, was £13,596,686. In the subsequent ten years ending 1871 it was not so large, only amounting to £11,591,742, but there has since been an increase in the production.

To what proportions the energy and the enterprise that are now being directed to the development of this branch of industry may cause the production to attain, is a question beyond the power of human foresight to conjecture.

The discovery of the tin ores in the northern districts of New South Wales in 1870 was scarcely less sudden or exciting than that of gold in 1851, although the existence of both of these metals was spoken of by the Rev. W. B. Clarke some years prior to the discovery of their marketable value by the public. The extent of tin-bearing land in the Colony cannot yet be even approximately stated, but the area is known to be very great and not to be confined to the districts where the miners are now employed.

Mr. F. Gregory reported to the Queensland Government early in 1872 that having measured 170 miles of creeks and river beds in that part of Queensland which touches the northern boundary of New South Wales, he found, on calculating the value on a fair assumption of the average amount of stream tin (irrespective of vein or matrix tin), that it amounts to £13,000,000. Mr. Gregory has since reported the area of stanniferous

country in Queensland to be about 550 square miles. He supposed an average of ten tons per linear chain. The average returns during 1873 were at the rate of 400 tons per month.

No such investigation has been made on behalf of New South Wales; but if Mr. Gregory's data be correct, the value of the New South Wales portion of that one field (which is two-thirds of the whole) may be set down at £26,000,000. And this most northerly field is not richer than those which are situated farther south. Mr. Clarke says that having seen the greater part of the granite masses of the Colony, he is impressed with the opinion that for centuries to come the industry now commenced will continue to occupy a prominent position among the producers of Colonial wealth, just as the mines of Tennasserim, Merghui, and Malacca have not decreased in value since the commencement of their working. The average produce of the above-named mines is from 60 to 80 per cent., and their value reckoned at nearly four and a-half millions per annum.

Tin-fields of unexampled richness have been discovered in Queensland, the presence of the metal being detected over an area of 550 square miles, chiefly in the water and bed of the Severn River. It is probable that the lodes and veins will prove a source of great wealth, and perhaps render Australia one of the first tin-producing countries in the world.

Mr. Smyth, the Government geologist, also states that nearly all the creeks and gullies in the vicinity of Beechworth, Victoria, are stanniferous, and will undoubtedly be worked for that mineral in the future, and from the large number of tin-bearing lodes and deposits of stream tin, tin will yet be one of the products of the district.

The iron ore which has been wrought in New South Wales has been found to be from 20 to 25 per cent. richer than the iron ore of Great Britain. The iron beds are almost co-extensive with the coal measures; and considering the great and special advantages the Colony possesses for trade with foreign countries, we may conclude that New South Wales is destined to emulate the industrial greatness of Britain, if not in the lapse of years to surpass it.

"Every man of thought," says a well-known writer on geology, "must be more or less impressed with the conviction that much of Britain's supremacy in mechanical and manufacturing industry has arisen from the rich and readily accessible coal-fields. They are the mainspring of her mechanical power, and the stay of her commercial greatness. These two substances, coal and iron, have been the main factors in all recent progress; and that which most broadly distinguishes the Britain of the present from the Britain of preceding centuries is the extended and extending use of these two substances through the instrumentality of the steam engine." These words will soon be as applicable to New South

Wales in the southern hemisphere as they are to Great Britain in the northern belt of the globe.

Queensland is rich in metals and minerals. Mercury ores have been found in large deposits at the head of the Mary River, and on the Clarke River, a tributary of the Burdakin, copper, lead, zinc, and antimony are very generally found.

The extensive copper mines of Clermont, on the Peak Downs, have long been known, and will probably some day be found to be as rich as any that have been discovered in Australia. The value of the copper shipped from Queensland from 1862 to 1871 was £581,573. In 1871, the quantity of ore raised was 14,503 tons; of refined copper, 2,490 tons, valued at £174,800; so that copper mining may now be considered one of the great future industries of Queensland.

Mining skill and additional capital are required to open up the tin mines, and develop the mineral resources of the Colony.

The mining resources of Queensland already developed are very considerable, but bear small proportion to the amount of mineral wealth that will be available when the means of transit to the coast by the extension of railways becomes more complete.

Gold-fields occur at intervals all along the eastern portion of the Colony between the main range and the sea, and on the flanks of the McKinlay Ranges, which form part of the watershed of the Gulf of Carpentaria, there are forty-seven registered gold mining companies working on these fields. Gold has been discovered over an area of 4,000 square miles, and about 1,400 square miles are actually worked upon. The average annual value of the gold at present exported is only about £500,000 or £600,000. In 1872, 186,019 ozs. were exported.

There is every reason to believe that copper mining will be one of the most permanent and productive of Australian industries, and it is in South Australia that copper ore is chiefly obtained. In the ten years ending with 1871, the total value of the metals and minerals exported from South Australia was £6,500,000. This was chiefly copper, but includes a small quantity of lead and bismuth. The Burra Burra, the Wallaroo, and the Moonta mines (not to speak of others) have all been most fortunate undertakings. For the latter not a penny of capital was ever subscribed; from the time that ore was first found the mine was sufficiently remunerative to pay all expenses of working—a property which cost the shareholders nothing is now valued at £712,000. On these mines dividends have been paid amounting to £728,000. There can be no doubt that the Colony is only on the threshold of its mineral discoveries. It is believed that copper is freely scattered over a large portion of this immense territory.

The value of the copper and copper ore shipped from South Australia

in 1872 was £802,784. In the north, mines of great wealth have also been discovered; and it is averred that 200 miles north of Port Augusta the country is full of copper, whilst in the northern territory itself, 150 miles south of Port Darwin, very rich gold quartz reefs have been discovered, which are now in course of active development.

The total yield of gold in Victoria in 1872, assuming it to be equal to the amount received at the Mint, added to the Customs' returns of the Victorian gold exported, was 1,282,520 ozs. 16 dwts., and in 1873 it was 1,220,879 ozs. Calculating upon the same principle from the first discovery of gold in 1851 to the end of 1873, and including also 1,267,241 ozs. taken away overland in the four years 1852-1855, and passed through the Customs of the adjacent Colonies without being recorded in Victoria, the whole quantity raised in the Colony has amounted first and last to no less than 43,258,205½ ozs., representing, at £4 per oz., a total value of £173,032,821.

According to information supplied to the Mining Surveyors and Registrars by the banks and gold mining companies, and judging also by their own knowledge of the workings in their districts, these officers estimated that in 1873, 57 per cent. of the gold was obtained from quartz, and 43 per cent. from alluvial workings.

According to estimates made by the Secretary for Mines, the quantity of gold minted and exported would, if divided amongst the mean number of miners employed in 1873, represent an average of £93 16s. 2d. per man.

According to the estimates made in the Mining Department of the Colony, the value of metals and minerals (other than gold) raised in Victoria from the period of the first discovery of gold in 1851, to the end of 1873, was nearly £500,000, of which tin, antimony, silver, copper, kaolin, and flagging formed the principal items.

Within the last seven years there has been a large decrease in the number of alluvial mines in Victoria. The gold-fields have ceased to attract the miners of Europe, and there is no longer a large immigration, many of those who engaged in gold mining some years ago, are now no longer able to follow the pursuit, and so many temptations are offered to miners to take up and cultivate land, that large numbers have forsaken the gold-fields in order to establish homes in places where, if the gains are small, they are tolerably certain. Many of the best miners have gone to New Zealand, New South Wales, and Queensland, in the hope of bettering their condition in the gold-fields and mineral tracts of those provinces. The numbers employed in quartz mining in Victoria has not altered much. The gains are great, and this branch of mining is likely to become more and more attractive.

There are still about 15,000 Chinese employed on the gold-fields of

this Colony. These people, patient and toilsome, have invariably followed the European miners, extracting from their abandoned claims and spoil-heaps the gold, which, but for their labours, might have been lost for ever; and they have shown, too, in all places where they have settled, how the bare rock can be made to blossom as the rose. They are skilful and industrious gardeners, and in following their pursuits, they have set a good example to Europeans.

The enormous impulse which gold discoveries give to colonization, and the extraordinary commercial progress which they induce, have been strikingly manifested in modern times—California, Australia, British Columbia, and New Zealand, all afford instances of the wonderful effects which are produced by the development of auriferous deposits. As agencies in colonization, gold discoveries exercise a gigantic influence. They draw population, lead to the opening up of desert wilds to civilization, and carry in their wake all the industries necessary for the progress of a numerous population. In New Zealand, gold has effected transformations impossible under the ordinary progress of colonization. Busy and thriving populations are in a few weeks planted in localities previously remote and unknown. Tracts of country, which under other circumstances would rest in their primeval desolation for many years, become suddenly thrown open, and prosperity, rapid and brilliant, is created.

New Zealand has been richly endowed by Nature with the possession of valuable and necessary raw material, and in nothing has she been more bountiful than in the mineral treasures which are so widely distributed over the Colony. The day may be distant when the forests and fertile plains of New Zealand will resound with the clang of the forge or the hum of the factory, and the midnight glare of the furnace illumine the surface of her lakes and rivers, but it is no mean thing for the Colonists to know that they have in their hands the elements which will set in motion and feed those great engines of civilization. New Zealand possesses all the principal minerals and metals, besides a great variety of those of less importance.

Gold is the chief metal obtained, of which we shall speak fully, but other valuable metals, such as silver, mercury, copper, lead, chrome, manganese, and iron, have been discovered in various parts of the Colony, and in due time will be profitably worked when the circumstances of the labour market permit. Ores of the last-mentioned metal, iron, are remarkably abundant, and are already attracting attention, so that several mining and smelting companies have been formed, the operations of which will afford a very considerable employment for labour.

Gold was first found in Massacre Bay by an exploring party, under Capt. Wakefield, in 1842, but the discovery did not attract much atten-

tion at the time. Nothing further seems to have been done until 1852, when gold was discovered at Coromandel, but only about 1,100 ozs. were obtained, and the search was given up.

It is not many years since gold was first discovered at Coromandel—that is, Kaparga district—and up to the end of 1873, no less than 853,688 ozs. of the precious metal had been exported from the province of Auckland alone. In the year 1873, 8,549 tons of stone, crushed in this district, yielded 14,867 ozs. of gold. The Thames gold-field, situated on the same peninsula, further south, was opened in August, 1867, much later than Coromandel, yet it has altogether outstripped the previously prospected gold-field. The district yields an average of 10,000 ozs. of gold per month. The richness of this field is indicated by the fact that amongst the pioneers, the six owners of Hunt's claim, one of the first taken up, obtained 25,000 ozs. of gold in a few days' work. The "Golden Crown" paid £200,000 dividend in twelve months; and the "Caledonian," more subsequently, yielded ten tons of gold in about the same period, and distributed £572,000 amongst the shareholders.

In 1856, gold was found in several localities in Otago, but without any immediate result. In the same year gold was again discovered in Massacre Bay, and about a thousand persons soon collected there, who worked with some success. Discoveries were also made in that and the succeeding years in Otago, yet public attention does not seem to have been aroused until June 1861, when Mr. Gabriel Reed made the great discovery of gold in one of the tributaries of the Tuapeka River flowing through the ravine that is still called Gabriel's Gulley, after the name of its discoverer. From that time discoveries of gold were made in various places in Otago, also on the west coast of the Province of Canterbury (now Westland), and finally at the Thames, in the Province of Auckland.

A very large number of the population of New Zealand are occupied in mining for gold, which for the last twelve years has formed one of the most important exports of the Colony. The gold is obtained in two forms—viz., as alluvial gold (which is washed from the sand and gravel which occupy valleys in the mountain ranges), and as veins in quartz reefs.

Alluvial gold is chiefly found in the South Island in the Provinces of Otago, Westland, and Nelson, in which districts mining operations are carried on over an area of almost 20,000 square miles. The quantity of gold exported from these Provinces up to 31st March, 1874, amounted to 6,421,061 ozs. of the value of £25,273,379. The extraction of gold from the lodes or quartz reefing, as it is termed, is still in its infancy in New Zealand, except in the Thames district of the Province of Auckland, where it has been carried on for about twenty years, and gold to the value of £3,051,461 obtained.

Other mines have given handsome returns, although less dazlingly rich than those mentioned. There is little doubt that the whole of the peninsula from Cape Colville to Te Aroha mountain, a distance of 120 miles, is more or less auriferous, and will afford employment to a large mining population for an indefinitely lengthened period of time.

Although we have some official returns of the exports of gold from the Australian Colonies, no reliable estimate can be formed of the quantities which have been sent away privately, nor of the quantities used and manufactured for Colonial purposes.

The value of the gold exported from our principal Colonies from the first discovery appears to have been as follows, according to the latest returns :—

New South Wales, to.....	1873	...	£80,000,000
Victoria	1873	...	173,082,821
New Zealand	1872	...	25,852,477
Queensland.....	1872	...	3,190,320
Nova Scotia	1872	...	948,000
British Columbia	1872	...	4,500,000

£287,523,618

Taking the five years ending 1871, the value of the gold shipped from the three principal producing Colonies in Australasia and the rate per head of the population was as follows :—

	VICTORIA.		N. S. WALES.		NEW ZEALAND.	
	VALUE.	RATE.	VALUE.	RATE.	VALUE.	RATE.
	£	s.	£	s.	£	s.
1867	5,738,993	174/	129,619	5/9	2,724,267	249/2
1868	6,629,465	193/9	125,293	5/4	2,492,721	220/
1869	5,363,759	160/10	309,053	12/9	2,341,592	197/5
1870	4,891,781	135/	386,930	15/4	2,163,910	174/3
1871	5,423,687	148/8	910,825	38/5	2,788,368	208/10
Average	5,609,537	159/10	372,344	15/8	2,502,173	208/10

The discovery of diamonds on the Vaal River, near the northern boundary of the Cape Colony in 1869, led to a large immigration, and to the formation of extensive settlements in West Griqualand, where many thousands of persons are now engaged in actual digging operations and in trade. The lowest estimate of the value of all the diamonds that left the Colony during 1871 is placed at two millions sterling. Within the Colony gold has not yet been found in payable quantities, though the rocks extending over a large portion of its area are to all appearance so identical with those of Australia, that geologists from that continent are

Other mines have given better results than those mentioned. There is a large peninsula from Cape Cod, Massachusetts, where the ore is more or less continuous and the mining population is as follows:

Although we have not identified any other cases of *Ascaris* Colonic, a similar case was reported that had been sent away previously as a *Trichinella* infection for Colonic group.

The value of the gift reported from a small business for recovery appears to be less than that which would be

For Scott MacLean	100	1000
For John	100	1000
For David	100	1000
For David	100	1000
For David	100	1000
For David	100	1000
For David	100	1000

Form: 1-10-1000
Date: 10-10-10

single villages about a week's march, which have agreed to supply a regular train of carts of Whincle, in return for a small bribe or black mail from passing travellers. The centre of patches of jungle, with a few paths, which could easily be

Proceeding westward, on the some dependent villages form o caravans proceeding to the y forays on the surrounding g out and destroying villages, ho are not killed or are unable ves there are any who, by age , they are frequently murdered of their food. In other direc- possessed of large shambas or h for the purpose, frequently somehow or another to arm a untry, fomenting the quarrels ing as a rule the side of the have been conquered, in slaves n, if they find themselves strong a village without any pretext at their plundering the caravans of th any chief who is at war with bberies are either brought into t comes round on a purchasing

the normal modes in which slaves are
that an abnormal cause for a large amount,
and the Arabs. The effects of this war
of country which have been depopulated
Cameron states with regard to its re-
continue to be, an impossibility until commu-
world, by means of a railway from Bagomoyo
up, and this railroad presents no engineering
When this trunk line is finished, he would
of European Commissioners near Mbumi in
they should each have at their disposal a force of about
soldiers, and a sufficient number of European subordi-
to be able to punish any one found in the slave trade, and
petty wars which foster it. Here should be stationed two or
about fifty tons each, which might be sent up in pieces, to

tion at the time. Nothing further seems to have been done until 1852, when gold was discovered at Coromandel, but only about 1,100 ozs. were obtained, and the search was given up.

It is not many years since gold was first discovered at Coromandel—that is, Kaparga district—and up to the end of 1873, no less than 853,688 ozs. of the precious metal had been exported from the province of Auckland alone. In the year 1873, 8,549 tons of stone, crushed in this district, yielded 14,867 ozs. of gold. The Thames gold-field, situated on the same peninsula, further south, was opened in August, 1867, much later than Coromandel, yet it has altogether outstripped the previously prospected gold-field. The district yields an average of 10,000 ozs. of gold per month. The richness of this field is indicated by the fact that amongst the pioneers, the six owners of Hunt's claim, one of the first taken up, obtained 25,000 ozs. of gold in a few days' work. The "Golden Crown" paid £200,000 dividend in twelve months; and the "Caledonian," more subsequently, yielded ten tons of gold in about the same period, and distributed £572,000 amongst the shareholders.

In 1856, gold was found in several localities in Otago, but without any immediate result. In the same year gold was again discovered in Masacre Bay, and about a thousand persons soon collected there, who worked with some success. Discoveries were also made in that and the succeeding years in Otago, yet public attention does not seem to have been aroused until June 1861, when Mr. Gabriel Reed made the great discovery of gold in one of the tributaries of the Tuapeka River flowing through the ravine that is still called Gabriel's Gulley, after the name of its discoverer. From that time discoveries of gold were made in various places in Otago, also on the west coast of the Province of Canterbury (now Westland), and finally at the Thames, in the Province of Auckland.

A very large number of the population of New Zealand are occupied in mining for gold, which for the last twelve years has formed one of the most important exports of the Colony. The gold is obtained in two forms—viz., as alluvial gold (which is washed from the sand and gravel which occupy valleys in the mountain ranges), and as veins in quartz reefs.

Alluvial gold is chiefly found in the South Island in the Provinces of Otago, Westland, and Nelson, in which districts mining operations are carried on over an area of almost 20,000 square miles. The quantity of gold exported from these Provinces up to 31st March, 1874, amounted to 6,421,061 ozs. of the value of £25,273,379. The extraction of gold from the lodes or quartz reefing, as it is termed, is still in its infancy in New Zealand, except in the Thames district of the Province of Auckland, where it has been carried on for about twenty years, and gold to the value of £3,051,461 obtained.

Other mines have given handsome returns, although less dazzlingly rich than those mentioned. There is little doubt that the whole of the peninsula from Cape Colville to Te Aroha mountain, a distance of 120 miles, is more or less auriferous, and will afford employment to a large mining population for an indefinitely lengthened period of time.

Although we have some official returns of the exports of gold from the Australian Colonies, no reliable estimate can be formed of the quantities which have been sent away privately, nor of the quantities used and manufactured for Colonial purposes.

The value of the gold exported from our principal Colonies from the first discovery appears to have been as follows, according to the latest returns :—

New South Wales, to.....	1873	...	£80,000,000
Victoria	1873	...	173,032,821
New Zealand	1872	...	25,852,477
Queensland.....	1872	...	3,190,320
Nova Scotia	1872	...	948,000
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convinced of its existence. The export of copper ore from the Cape Colony was 13,240 tons valued at £328,458.

In Ceylon the only discovered mineral of any importance is plumbago, the export of which has considerably increased during the last few years owing to the extensive European demand for crucibles. Crucibles made of plumbago have a much greater power of resisting the high temperature employed in smelting than any others yet constructed. There are at present 137 plumbago mines in operation. The raw material is found principally in veins underlying quartz in the south and south-west of Ceylon, and is worked by the natives under licences from Government. The export, which in 1861 was but 83,605 cwt., had increased in 1873 to 168,267 cwt.

Plumbago is largely used in the preparation of what is called "black lead," for polishing purposes, and is besides extensively mixed with pure Cumberland lead for the production of inferior pencils. A more recent application of it, and probably the most useful, is as a lubricant. Owing to its close molecular structure, it possesses many of the properties of grease, and has one advantage over it, viz., that it does not become foul or hard, and is therefore less likely to clog. As an anti-frictional for the journals and bearings of machinery, especially when of great size and consequent weight, it is likely to supersede in a great measure other materials now used.

In Canada, gold, silver, copper, iron, and plumbago are found, besides apatite and petroleum. In the fiscal year ending June, 1873, the value of the produce of the mines exported, chiefly copper, was over £1,000,000 sterling. The mineral wealth of the country is not surpassed by any other in variety and richness. It has not yet, however, received anything like the attention it deserves, and may be said to be almost entirely undeveloped.

On the north shore of Lake Huron are the celebrated Bruce mines of copper, from which ore and metal to the value of £50,000 are exported annually. Silver is found on the shores of Lake Superior, particularly in the neighbourhood of Thunder Bay.

Silver Islet, a small island in this bay, contains one of the richest veins of this metal ever discovered. An American company, in 1870, took out £2,000 worth of ore in two days, and soon after £12,000 worth in four days. There are other veins on the mainland almost, if not quite, as rich.

Petroleum is got in the westerly part of the Province in immense and apparently inexhaustible quantities. The first wells were struck at Oil Springs, county of Lambton, in 1862, and by March, 1863, over four million gallons had been obtained. Other regions have yielded this valuable mineral in large quantities; Bothwell, in the county of Kent,

and Petrolea, in Lambton, being the principal. The last-mentioned place is now the largest producing district. In 1867, 180 wells were sunk with great success, 120,000 barrels being shipped and 200,000 tanked for future use. In 1869, the produce had increased to between 800 and 900 barrels a day, equal to over 800,000 in the year. Canada requires for home consumption only about 150,000 barrels, so that there is ample surplus for export.

The difficulty in getting the Canadian oil into European markets was its odour. American oil has been readily deodorised, and consequently kept Canadian out of the market. Some time ago, however, a process was invented by which the Canadian article can be perfectly deodorised and as this oil is superior to American in having greater illuminating power, and being less explosive, a large export trade is being rapidly developed. From 1866 to 1870 the quantity of rock oil or petroleum entered at the excise for home consumption in Canada was over 1,000,000 gallons, and for export 7,000,000 gallons. In 1872, nearly 8,000,000 gallons were exported, valued at £272,200.

Nova Scotia is endowed with mineral wealth to an extraordinary extent, although hitherto it has been but little developed, with the exception of coal. Iron ores, as might be expected from the abundance of coal, are found in all parts of the province, of which the quality is so superior that experiments have shown it will furnish steel equal to the best Swedish.

Scientific men had long believed in the existence of gold in certain districts of Nova Scotia, but it was not until March, 1861, that its discovery in workable quantities was accidentally made known by a man who, stooping to drink in a brook, observed a piece of gold, and on further search found more.

Miners were speedily attracted to the spot, and their success soon established the gold mines at Tangier, about forty miles to the east of Halifax. Soon afterwards, gold was found at Lunenburg, at a place called the Ovens, sixty miles west of Halifax, and Allen's Farm only nine miles from that city. This locality is now called the Waverley Mines, where some of the finest nuggets have been found. Further discoveries were subsequently made at several places on the Atlantic coast and other localities.

In 1872, the total yield of gold in Nova Scotia was £3,016, against nearly £4,000 in the previous year. Quartz is the chief source of gold in this province. The attention of the miners here has been too much confined to narrow lodes; but when it comes to be understood that it is relatively cheaper to operate on large quantities of low grade ore, than on picked lots of rich ore, wide veins, yielding five to ten pennyweight per ton, which might be profitably worked on an extensive scale, at a cost of

only two or three pennyweights, will cease to be disregarded. Small veins, however, will never be wholly abandoned so long as it is remembered that in Grass Valley, California, seven million dollars worth of gold were produced from a lode only averaging 14 inches in width.

In British Columbia, within twelve years, nearly five millions sterling worth of gold have been exported, and unless common and scientific opinion is entirely wrong, the gold-fields of the province have hardly yet been touched. The gold-bearing districts extend over several thousand miles of country. Indications of gold are also found generally in Vancouver and Queen Charlotte Island; but very good paying diggings have not yet been found there. The history of the older mining country of California, shows partly what may be expected in British Columbia. Copper-mining has been commenced in many places, but not very actively prosecuted, owing to want of capital. The appearances for successful copper-mining in several parts of the province are considered to be very encouraging.

In treating this section of our subject, we have had to be discursive and superficial, treating only generally of the minerals and metals, which at present have any commercial importance, and if figures bristle over the pages, these are necessary to show the importance of the mineral production. Sufficient facts have, however, been adduced to prove incontestably the immense value and importance of our Colonies on account of their mineral productions alone, irrespective of all their other valuable products.

THE EAST AFRICAN SLAVE TRADE.

THE Treaty which was concluded upon the 5th June, 1873, by Sir Bartle Frere, with the Sultan of Zanzibar, has been followed by a series of operations conducted upon land and at sea by the Consular and Naval Officers engaged in the repression of the East African slave trade. By philanthropists and others it is universally felt that until this blot, which exists at the present time upon one of the fairest and most fertile portions of the world, is put an end to, little or nothing can be accomplished in furthering the interests of religion and civilisation. The papers containing the correspondence upon this subject have appeared, and they furnish us with the means of estimating the difficulties that surround the undertaking, and the probable chances of ultimate success.

Lieutenant Cameron, R.N., who visited Ujiji, gives the result of impressions gathered during his journey to the interior. He states that

the slave trade flourishes in a belt of jungle villages about a week's march from the coast, the people of which have agreed to supply a certain number of slaves to the inhabitants of Whincle, in return for which they are allowed to extort "mhongo," or black mail from passing caravans. These villages are built in the centre of patches of jungle, and only accessible by narrow and tortuous paths, which could easily be blocked so as to render access impossible. Proceeding westward, on the regular caravan route, Simbawein and some dependent villages form another centre, where slaves are sold to caravans proceeding to the coast. They are principally procured by forays on the surrounding Washenzi—or wild people—a party setting out and destroying villages, and carrying off those of the inhabitants who are not killed or are unable to make their escape. If among the captives there are any who, by age or infirmities, are valueless in the market, they are frequently murdered in cold blood, in order to save the value of their food. In other directions the Arab dealers, who are generally possessed of large shambas or farms, and who are therefore rich enough for the purpose, frequently adopt the following plan:—They manage somehow or another to arm a party of men and travel about the country, fomenting the quarrels between neighbouring villages, and taking as a rule the side of the stronger, are repaid, after the other side have been conquered, in slaves and ivory for their assistance. These men, if they find themselves strong enough, are exceedingly prone to attack a village without any pretext at all; and instances have been known of their plundering the caravans of other Arabs, and also of their joining with any chief who is at war with the settlers. The proceeds of their robberies are either brought into Unyanyembe, or they wait until an agent comes round on a purchasing expedition.

These may be considered the normal modes in which slaves are obtained; but there is at present an abnormal cause for a large amount, viz., the war between Mirambo and the Arabs. The effects of this war may be seen in the large tracts of country which have been depopulated by this infernal traffic. Lieutenant Cameron states with regard to its repression, that it is, and will continue to be, an impossibility until communication with the civilised world, by means of a railway from Bagomoyo to Ujiji, can be opened up, and this railroad presents no engineering difficulties of importance. When this trunk line is finished, he would recommend the appointment of European Commissioners near Mbumi in Unyanyembe. They should each have at their disposal a force of about 500 or 600 Indian soldiers, and a sufficient number of European subordinates, in order to be able to punish any one found in the slave trade, and to prevent the petty wars which foster it. Here should be stationed two or three vessels of about fifty tons each, which might be sent up in pieces, to

protect legal trade, and to stop the transport of slaves. Being a question of such importance, affecting the whole civilised world, a Commission of the different Great Powers might be formed in order to decide as to what means should be taken in order to do away with this curse of Africa.

The services rendered by the naval officers are given in a continuous form by Rear-Admiral Cumming. Writing from H.M.S. *Glasgow*, Gulf of Aden, upon 7th March, 1874, the Admiral informs the Secretary to the Admiralty that during the year 1873 the total number of dhows captured by Her Majesty's ships under his command was thirty-nine; of these, three had not been condemned; therefore the number of the captures for the year may be taken as thirty-six. The vessels employed were the *Glasgow*, *Wolverine*, *Briton*, *Daphne*, *Vulture*, *Nimble*, *Maggie*, and *Shearwater*, of which the *Glasgow*, *Wolverine*, *Nimble*, and *Maggie* were ordered temporarily to Zanzibar to enforce, if necessary, the signing of the Treaty. The regular cruiser had been the *Briton*, employed on the coast during the whole year; and the services performed by the officers and men under Captain Malcolm deserve the highest praise. The *Daphne* had also rendered very valuable service in the suppression of the slave trade, six of the nine vessels captured by her having been condemned; and the *Vulture* had been employed for a portion of the time, and had made one capture.

The operations glanced at by the Admiral may be learned from the reports of the captains of the different vessels, and we can understand the description of service upon which Her Majesty's officers and seamen are engaged. Captain Foot, of the *Daphne*, reports that whilst cruising off Bayama Bay, a dhow was sighted from the masthead; he proceeded under sail and steam in chase, and she not showing her colours, three blank charges were fired to which no attention was paid. Shot were then fired from the 6½-ton gun and bow 64-pounder, but the dhow still ran in for the shore, but after two shots falling close alongside and splashing them she lowered her sail, and Lieut. Henderson boarded her and found 225 slaves on board, and forty-one Arabs and Commoro men, who tried to pass themselves off as passengers, but who all owned slaves, part of the cargo, and are implicated in the slave trade. These were taken to Zanzibar, as also the slaves, who were in a most emaciated state and suffering from dysentery. The capture of another slave dhow was effected by the *Vulture* off the north-west coast of Madagascar, with 239 slaves on board. Most of these were in the last stage of emaciation, and a great number suffering from dysentery. The lower slave-deck of the dhow measuring 3½ feet high and 110 feet long, in which 160 human beings had been kept since leaving Mozambique seven days before. Seventeen deaths of the liberated Africans took place on the passage from exhaustion.

although every care was taken of them by Dr. Reed and the officers of the ship. Two hundred and nineteen liberated Africans were landed at Seychelles, and handed over to the Civil Commissioners there. After coaling and refitting, the *Vulture* proceeded to Zanzibar with the Arab slave-dealers, twenty-five in number, nearly all of whom have proved to be Zanzibar men, and have been handed over by Her Majesty's Consul-General to be dealt with by the Sultan. Upon another occasion, Captain Ward, of the *Thetis*, mentions that, after a chase of two hours, he came up with a dhow and sent the first lieutenant on board with the cutter. She had no papers or colours, and nobody on board acknowledged to being the captain; she had on board thirty-eight slaves and twelve dealers. She had no cargo whatever, except food and matting, and several casks of water. The dealers were unable to give any reasonable explanation, and the dhow was captured accordingly. The same ship came up with another dhow which had a very suspicious appearance, but in consequence of her carrying French colours she was allowed to escape.

With regard to the further prevention of this inhuman traffic the remarks made by the Admiral will, without doubt, have their due weight with the Secretary to the Admiralty. Admiral Cumming calls attention to the fact that, in his opinion, the boats attached to the ships are, for several reasons, not at all suited for cruising on the coast; the men are much exposed, and, as a natural consequence, are liable to be rendered unserviceable. Again, the size of the boats render it in many cases impossible for the captain and crew of the captured vessel being brought to the port of adjudication; they are necessarily landed, and, therefore, escape punishment. It would be advantageous if power could be given to our cruisers to search vessels flying the French flag. At present, if these vessels are supplied with the "Acte de Francisation" and the "Congé," no further steps can legally be taken, and their papers, it appears, are not difficult to obtain. The want of properly qualified interpreters has been felt, and if sufficient inducements were offered, many officers would render themselves competent to converse in the Swaheli language; and as an inducement for officers to qualify, the Admiral suggests that the same pay should be granted as that given to officers who pass in Hindustanee or Persian.

GUN-COTTON AND OTHER EXPLOSIVE SUBSTANCES.

THE final Report of a Committee appointed by Mr. Cardwell, the then Secretary of State for War, on the 20th September, 1871, has been made public. The original objects of the Committee were to institute inquiries, and to report as to whether the manufacture of gun-cotton in its various stages, and its subsequent employment, are dangerous, and whether attended with such uncertainty and peril as to induce the War Department to relinquish its manufacture and use ; whether its storage, either wet or dry, in magazines, or on board ship, is, necessarily, attended with danger ; with the nature of the buildings best suited for its stowage ; and whether, in a pure or impure state, it is liable to spontaneous combustion, and, if so, whether such combustion would result in explosion or mere ignition. The Committee were also required, on a requisition from the Secretary of State for the Home Department, to undertake an investigation as to the question of the safety, for transport and stowage, of lithofracteur. Subsequently, dynamite and nitro-glycerine compounds were added to the subjects for investigation.

Before proceeding to the consideration of the Report, it may, perhaps, be interesting to give a brief account of the nature of the various substances. Professor Miller, in a report on explosive and inflammable substances, printed in 1872, describes gun-cotton, nitro-glycerine, and dynamite, as follows :—

Gun-Cotton.—This is a material which was discovered by the Swiss chemist, M. Schoenbein, in 1845. It does not differ from ordinary cotton in appearance. It is a true chemical compound, in which the elements of nitric acid (in the form of peroxide of nitrogen) have been substituted by chemical processes for a part of the hydrogen of the cotton fibre, without destroying its texture and form. Gun-cotton, when heated to about 300° Fahr., takes fire, and if in open air, burns furiously, with a brilliant flame, without explosion. If kindled by means of a detonating fuze, it explodes suddenly, even in the open air, and produces a most powerful mechanical effect. If heated or kindled in a confined space, it explodes, with great violence and suddenness, producing a mechanical effect equivalent to from three to six times that of an equal weight of powder. It may be preserved unaltered for years in the damp state, or when submerged in water, and when dried it is at once obtained with all its ordinary properties. When dry, it explodes if struck sharply, as by the blow of a hammer on an anvil ; but the fire does not extend beyond the actual portion compressed by the blow.

As regards its commercial use, it is stated that it has been chiefly used hitherto in mining operations for civil purposes, though it appears to be particularly well adapted to military mines and to submarine operations, as torpedoes and the like. At that time (1872) the only works in the United Kingdom for the manufacture of gun-cotton were established at Stowmarket by a joint-stock company, and they manufacture at the rate of about two and a-half tons weekly, principally in the form of cartridges for mining purposes.

Nitro-Glycerine is a powerfully explosive liquid, analogous to gun-cotton in its chemical nature, and was discovered by an Italian chemist named Sobreso, in the year 1847. It has also been called *glonoin*, and is sold as *blasting-oil*. It is prepared from glycerine by the action of a mixture of nitric and sulphuric acid upon concentrated glycerine. A chemical change is thus effected, in which a certain quantity of hydrogen is removed from the glycerine, and the elements of nitric acid (peroxide of nitrogen) enter into the glycerine in its place.

As regards the commercial use of this substance, we learn that nitro-glycerine was first introduced in 1864, as a blasting-agent in mining, by Mr. A. Nobel, a Swedish engineer. He has established manufactories at Stockholm and in Hamburg, at which last place not less than 700 lbs. are made up daily in different forms. Besides these there are three or four other manufactories belonging to other makers, at which considerable quantities are made. Its explosive force is calculated at from five to ten times that of an equal weight of gunpowder, so that it is a more expeditious, and, notwithstanding its high price, a more economical agent than gunpowder for blasting.

Dynamite is made by adding liquid nitro-glycerine to a particular porous form of siliceous mineral known by the Germans as *Kieselgühr*. It consists of the exuviae of animalculæ of a former epoch, which constitute deposits of considerable extent. One of these occurs at Oberlohe, in Hanover. This siliceous mineral can absorb about three times its weight of nitro-glycerine, so that the substance contains from 70 to 75 per cent. of the blasting-oil, and has the appearance of a pale reddish-brown powder.

Dynamite is also manufactured by Messrs. Nobel, at Hamburg, to the extent of 1000 lbs. weight daily, and is used as a blasting agent.

Details are also given by Professor Miller, as to the various stages of the manufacture of these substances.

As regards *litho-fracteur*, the only particulars given as to its nature are that it consists of 52½ per cent. nitro-glycerine, 22½ per cent. silica, and 25 per cent. mineral bodies. Of the nature of the "mineral bodies" referred to, Messrs. Krebo, the manufacturers, decline to give particulars,

as it is in them that the whole secret, and consequently the whole of their property, consists.

Experiments on an extended scale were carried out by the Committee with each of the materials for the purpose of fully testing their nature and also their action under every possible condition—wet, dry, frozen—kept for a period in a wet state and otherwise. The experiments detailed in the Report are highly interesting and well worthy the attention of all persons interested in the subject; our space, of course, forbids us to give any detailed particulars of them.

Among the most prominent of these experiments as regards gun-cotton is the following:—In April, 1872, two Martello towers between Hastings and Winchelsea were destroyed—one by the use of gunpowder, and the other by gun-cotton. In the first instance 800 lbs. of gunpowder were placed in three charges in the tower, and a detonator placed well in the centre of each charge, the barrels being unheaded. The result was that the tower was entirely demolished with very little disturbance as regards surrounding objects, some light wooden screens erected as close as fifteen yards from the spot being undisturbed by the explosion. Similar results were produced in the case of the other tower by the use of one-fourth the quantity of gun-cotton similarly placed, while it was expected, from the results obtained, that even a less quantity of the material would probably effect a good demolition.

Certain experiments were at various times also made with the object of testing the behaviour of various explosive substances when subjected to such a shock as would be caused by the impact of a bullet, fired from a rifled small-arm, with the following general results:—

A wooden box, containing 28 lbs. of gun-cotton, was fired at with a Snider rifle, at a distance of 80 yards, the first shot penetrating the box and inflaming the gun-cotton, but not producing any explosion.

A barrel of gunpowder was several times fired into without any explosion.

A box containing 9 lbs. of lithofracteur-cartridges, upon being fired at, at a distance of 100 yards, exploded violently, as also did a box containing 5 lbs. of the same substance, as ordinarily packed in cardboard.

Upon a subsequent occasion, a box containing 20 discs of damp compressed gun-cotton was fired into five times from a Snider rifle at a distance of 30 yards without any effect, as regards explosion or ignition, a subsequent examination showing that the bullets had perforated and smashed the discs without exploding or setting fire to a single particle of the gun-cotton.

The various experiments as regards the action of the different nitro-glycerine substances, at varying degrees of temperature, are of a very interesting character, but they all, more or less, tend to show that, at

exceptional temperatures, substances containing nitro-glycerine are to a certain extent dangerous, and require careful treatment, owing to the liability to exudation of the nitro-glycerine.

The conclusions of the Committee upon these experiments, and from the valuable evidence and reports placed before them, may be thus briefly summarised :—

As regards gun-cotton, that it is a substance admirably adapted as an explosive agent for military engineering purposes and for submarine mines, that it may be kept for a considerable period in either a wet or dry state, without impairing its efficiency, and that its manufacture, stowage, and transport is not attended with greater danger than that of other explosive substances.

As regards lithofracteur, that under ordinary conditions of temperature, it might be safely subjected to exceptionally severe concussions, and that it was not liable to accidental explosion by rough handling, or by any violence to which it might be subjected in usual transport. The results, however, as regards its action at exceptional temperatures and in a damp atmosphere, were not of a satisfactory nature, and, finally, the Committee report that lithofracteur has not fulfilled the absolutely necessary condition of retaining its proportion of nitro-glycerine under circumstances that might be met with during ordinary transport and stowage.

As regards dynamite, the Committee report upon two descriptions of this substance—that the first (No. 1) is a valuable explosive agent, and that it may be manufactured, stored, and transported, subject to the existing regulations laid down for other nitro-glycerine compounds, provided the percentage of pure nitro-glycerine does not exceed 75, and that of absorbent earth does not fall short of 24 ; that the second (No. 2), consisting of about 20 per cent. of nitro-glycerine, mixed with small quantities of charcoal and paraffin, and about 70 per cent. of an oxidizing salt, might, subject to the existing regulations, be manufactured, stored, and transported, provided the necessary precautions are taken to prevent the exudation of the nitro-glycerine, under circumstances that might occur under the ordinary conditions of transport and stowage. The Committee remark that when struck by a bullet from a rifled small-arm, dynamite almost invariably explodes ; and that all nitro-glycerine compounds, including dynamite, are liable to become hard in cold weather from the freezing of the nitro-glycerine at a temperature considerably above the freezing point of water, and that in this state the material requires to be carefully thawed before it can be effectively used.


As regards tests for nitro-glycerine compounds, which the Committee undertook, at the instance of the Home Office, with a view to determine their safety, they recommended that :—

(1.) A heat test, somewhat analogous to that laid down for gun-cotton; and

(2.) A test to determine the efficient character of the absorbing agent should be applied.

It may be well, while upon this subject, to call attention to the Bill relating to explosive substances, now before Parliament, and, without going into details as regards its provisions, to observe that this subject is deserving of the most careful attention of our legislators and all classes of the community. We are glad to observe that this measure proposes to extend to every explosive included in the Bill the provisions of the Merchant Shipping and Passengers' Acts as regards dangerous goods.

SAVING LIFE AT SEA.

OME four years ago, Mr. Holmes brought to the notice of the public an invention calculated to be of great service in cases of marine disasters at night. The number of projects which have from time to time been devised to assist in saving life at sea is exceedingly large; the great majority of them are utterly impracticable, and of the remaining minority which appear to have some claims for notice, we should say that very few indeed are ever likely to be, or ever have been, recorded as being serviceable at times when life-saving gear might be useful. So many people dabble, so to speak, in the cheap philanthropy which often characterises warm-hearted, but weakly natures, and which too often leans only upon the ignorant assumptions of popular enthusiasts, that all sorts of ill-considered and impracticable proposals are made with the object of saving life at sea. Now, we desire to point out to our readers that Mr. Holmes's invention does not profess to actually prevent loss of life; the promise made on its behalf, however, is one which it strictly fulfils, and we have no hesitation in saying that, as it successfully carries out its purpose, it is, *prima facie*, an honest invention, and, therefore, deserves consideration. The invention is a self-igniting and inextinguishable storm and danger signal-light, which, upon being thrown upon the water, bursts into flame, and for nearly an hour exhibits a most brilliant light, neither wind nor rain having any power to extinguish it. When to the dire confusion of a collision, or the foundering of a ship, the black darkness of a tempestuous night is superadded, the horror of the situation is indescribably more dreadful than if daylight existed. Mr. Holmes's lights, however, would,

at least, render the very great service of illuminating the darkness, and of enabling the bewildered sufferers to see what they were about. A shipwrecked crew in an open boat would, no doubt, find such signals most valuable. Again, in the case of a man overboard at night, one of these lights thrown into the sea would mark the spot where the accident occurred, and would show the endangered man the buoy or ropes sent out to him. There can be no doubt that these are really invaluable signals for all vessels to carry with them; their uses are manifold; and we advise our nautical readers to make a trial of them, and find out practically their usefulness. Indeed, we are much surprised to learn that so few people are acquainted with their value.

In corroboration of these remarks, regarding the value of the Holmes's rescue-light in cases of distress, the statement of Captain R. R. Gillon, ship *Bosphorus*, is appended:—

"At 9.30 p.m., on the 7th of August, in lat. 48° N., and long. 32° W., it being a dark night, with a strong wind, and heavy sea running, a man named John Rowe, a native of Plymouth, fell from the jib-boom into the sea; I heard his voice as he was passing the stern, and hove the Holmes's rescue-signal light to the sound, and it at once showed a very bright light. The ship at the time was going eleven miles an hour, and, of course, was a considerable distance from the man before she could be stopped and a boat got out; but, through the light pointing out the spot where the man was, he was found, and received on board in twenty-five minutes; but had there been no light, it would have been impossible to save him in such a sea, and on such a dark, cloudy night; and, strange to say, though life-buoys, oars, gratings, &c., were thrown overboard, neither of them were seen by the man in the water, nor yet by the eight men who manned the boat. I may state, I distinctly saw the 'light' forty-three minutes; it was then three miles off."

In addition to this storm and signal-light, Mr. Holmes has patented a life-buoy rescue-boat. Of the practical merits of this invention we cannot speak, but in Parliament Sir Charles Adderley has stated it to be so good that the Board of Trade will recommend its adoption by coasting sailing-vessels. This, we think, speaks very highly for it, and we shall be glad to know that Mr. Holmes deserves as much encouragement for his life-buoy rescue-boat as he undoubtedly does for his inextinguishable light. There is far more probability of life being saved by the aid of this light when a casualty occurs on a dark night, than by many of the numberless and elaborate arrangements proposed in the way of life-saving gear.

REPORT ON THE "SOURABAYA" IN RESPECT TO SEAWORTHINESS.

[The following report is extracted from a recent Parliamentary paper, and will, no doubt, be read with interest by many of our subscribers.—
ED.]

THIS is an iron sailing vessel, 200 ft. \times 25 ft. \times 19 ft. 9 in., moulded, and loaded to 3 ft. 6 in. freeboard. The body sections are, as on the accompanying diagram, uniform for 160 ft. of the length, that portion being intended to be used as a floating dock at a foreign port. A bow piece and a stern piece, each 20 ft. in length, have been added to temporarily adapt the structure to be navigated to its destination as a sailing-vessel.

The *Sourabaya* has not British registry; she is, therefore, exempt from our Merchant Shipping Act as to her seaworthiness. The following report is, therefore, only intended for the information of the Board of Trade, whose officers may be called upon at any time to pass a similar structure as a seaworthy vessel.

The annexed diagram (*see Frontispiece*) presents the midship sections of two vessels; the narrower and deeper section is that of the *Sourabaya*, on a scale $\frac{1}{2}$ inch equal to 1 foot. The broader and shallower section is that of the *Captain*, on a scale $\frac{1}{4}$ inch equal to 1 foot. It is evident from these lines that, in respect to *freeboard* the *Sourabaya* is much worse than the *Captain* was. The diagram gives the midship section only, but, a comparison of the complete hulls would be still more unfavourable to the *Sourabaya*. The spare buoyancy of *Sourabaya* is about 20 $\frac{1}{4}$ per cent. of the total volume.

With this low freeboard the *Sourabaya* immerses her gunwale when only 16° inclined. The hull has no sheer, so that the whole length of 160 feet of gunwale is immersed at the same inclination. At 25° inclination the water is in 6 feet upon the deck; at 30° it is in 7 ft. 10 in., and the gunwale is then 4 ft. 3 in. under the water.

A first-class ship of the size of the *Sourabaya* would have about, at least, 1 foot more freeboard amidships, and, in addition, have perhaps 2 feet of sheer aft and 4 feet forward. If this were added to the *Sourabaya*, the spare buoyancy would then be about 29 per cent. of the total volume.

The peculiar form of the water sections in the *Sourabaya*, so very bluff fore and aft, indicates that more than an ordinary freeboard will be required at mid-length of the vessel when crossing waves, even when the vessel is upright. The loss of buoyancy at the ends when the vessel sits on one wave-crest is much greater than it would be with

finer ends, while the buoyancy amidships is just the same per foot of immersion. To make up for the deficiency of buoyancy at the ends, the crest must rise higher upon the vessel amidships, and still higher in the *Sourabaya*, than in a vessel with finer water sections. The *Sourabaya* is in this respect very much overladen; and this conclusion is quite independent of stowage, for no lowering of the centre of gravity will prevent the vessel's sinking bodily in a wave. As the crest of a wave is sharper in outline than the corresponding hollow, a wave of a height equal to twice the freeboard must break over the vessel amidships if its fineness below the load-line at the ends be not less than the ratio between the section of the wave-crest and the section of the hollow. A wave 200 feet in length, crest to crest, and a little more than 7 feet in height, would, therefore, be level with the gunwale of the *Sourabaya* amidships.

The fullness of the water sections, to a slight extent, makes up for diminished sheer, but not nearly to the same extent in which they necessitate an increase of freeboard amidships.

The stability of a ship, or her power of righting herself from an inclined position, is measured by the product of the weight of the vessel by the horizontal distance between the vertical line through the centre of gravity of the vessel, and the vertical line through the centre of gravity of the displacement. As, in positions near the upright, the vertical line through the centre of gravity of the displacement continues to cut the central line of the transverse section at nearly the same point, the distance of the centre of gravity of the vessel from the vertical line through this nearly constant point can be used as the righting arm for such positions, without reference to the actual position of the centre of displacement or buoyancy. This distance has the same ratio to the distance of the centre of gravity from the nearly fixed point, that the sine of the angle of heel has to unity, or as the slope of an originally horizontal line per foot of beam. The nearly fixed point is the limiting point or *meta* to the height of the centre of gravity, and it is therefore called the *meta-centre*. Stability being the result of a relation of distance between these two points, of which one is fixed wholly by the dimensions of the vessel and of her displacement—the *meta-centre*—and the other is fixed by stowage, the position of the *meta-centre* for a given immersion is the fundamental point, in the consideration of seaworthiness, in respect to stability. The general effect of form upon the position of the *meta-centre* is thus illustrated when the floating body is of uniform section. If the immersed section be equal to the area of the square of the breadth at the water-line, from the *meta-centre* to the centre of buoyancy will be just one inch for each foot of breadth. If the square of the breadth at the water section be $1\frac{1}{2}$ times the area of the immersed section, from the *meta-*

centre to the centre of buoyancy will be $1\frac{1}{2}$ inches for each foot of breadth.

As the immersion increases, the above distance MB diminishes; but as the immersion increases the point B also descends. The point M therefore descends as the immersion increases, by the amount MB is diminished, as well as by the change in the position of B . These relations being considered, the effect of great displacement upon a given breadth will be seen to involve a necessarily low position of the meta-centre, and consequently a ship that will require to be loaded with care to have her centre of gravity at a safe distance below this unusually low position of the meta-centre.

In that standard work on shipbuilding, the treatise by Rankine, Barnes, Napier, and Watts, it is said that "it is believed that in most sea-going vessels the centre of gravity is nearly at the level of the load-water-line. The height of the meta-centre above the load-water-line usually ranges from *three to six feet*, being greatest in the smallest vessels;" and its average height is about *four feet*. In the *Sourabaya* there is no doubt that the centre of gravity is much below the load-water-line, but as the meta-centre is also 3 ft. 8 in. below the load-line, it is open to grave doubt whether the centre of gravity of the *Sourabaya* can be anything near to *four feet* below that point, or more than *seven feet* below the load-line.

To represent this question more clearly I have given a polar diagram of stability for the *Sourabaya*; kh is the line for stability. As this polar diagram is not known out of our department, having been only recently contrived by me for the investigations of stability that come before us, it may be necessary to explain the diagram.

From any point C in the vertical axis, with any radius Ck , describe an arc of a circle, cutting the axis in g . Draw radial lines, and set off upon these from the arc kg the righting arms for the centre of gravity at the point g , that is, make ab equal to the length of the righting arm for 40° inclination, join the points h, b_1, b_2, b, k ; this gives the curve of stability for radius Ck .

As the point g was taken arbitrarily, and in ignorance of the actual position of the centre of gravity, the arc kg may be now erased.

The peculiar property of this stability diagram is that, if a hollow curve be cut out of paper to radius Ck , and applied to the point k , and to any point on the vertical centre-line as B , it will cut the radial lines at a distance from the stability curve equal to the lengths of the righting arms at the respective angles, and for the centre of gravity at the point B . This method of representing stability is practically accurate, but not mathematically exact. When the radius Ck is great in proportion to

the length of righting arm, as in this diagram, the departure from mathematical exactness is inappreciable.

On the diagram the points M and B are respectively the meta-centre and the centre of buoyancy in the *Sourabaya*, and the distance M B is 3 ft. 8 in. As in the above quotation the usual position of the centre of gravity is said to be about 4 feet below the meta-centre, let k B be drawn with radius = $C k$; then will $k B h b k$ be the complete diagram of stability for centre of gravity at B for the *Sourabaya*, with centre of gravity 3 ft. 8 ins. below the meta-centre.

The stability curve begins at k , as a portion of the diagram arc through M. By "diagram arc" I mean an arc of a circle with $C k$ radius; the same arc is used for all positions of the centre of gravity. The stability curve at first inclines to the inside of the arc, that is to give greater stability than that due to a constant meta-centre. At the point c , however, the gunwale being just immersed, the stability curve begins to turn outward, giving less stability.

With one foot more freeboard the stability curve would have kept within the arc for other 5° , and it would have terminated at the point l , and the stability curve* would have been $k e l$. The radial lines between the curve $k e l$ and the arc $k B$, increasing up to 60° of heeling, represent the *righting arms* at the respective angles in an ordinary sea-going vessel of this size, according to the authorities cited above.

By reason of the unusually low freeboard, the stability curve is moved from $k e l$ to $k b h$; that side of the diagram is the result of form of hull, the arc side, as $k B$ is the result of stowage. Can the *Sourabaya* be loaded to have her centre of gravity so low as the point B, or at 7 ft. 3 in. below her load-water-line? I have not complete drawings of the vessel; but, unless the attention of the owners has been as particularly directed to this point as mine has been by the instructions of the Board of Trade, I cannot think it likely that the loading has been so executed that the centre of gravity is actually as low as the point B.

The importance of the position of this centre of gravity is seen by considering the condition of stability that would obtain with the centre of gravity placed at h , that is, 6 feet below the load-water-line. The maximum righting arm would be at 34° —it would be only one foot, or about the length of righting arm usual for 15° heel in ordinary vessels; and another way of stating this is, the heeling force which would incline an ordinary vessel of this size 15° , would capsize the *Sourabaya*, even if the centre of gravity be as much as 6 feet below the load-water-line.

In comparing the stability of a special vessel with that of other vessels of known character, it is advisable to draw all the diagrams to one

* This curve has not been constructed except for points k, e, l .

radius, say, as in this example, to 10 feet radius, or 5 inches, using a scale $\frac{1}{4}$ inch = one foot. An arc of horn, 5 inches radius convex, rather more than a quadrant, is the standard arc, and it can have engraved upon it the curves for some reference vessels, as that of the *Captain*. To make this diagram complete in itself, I have applied the diagram for the *Captain* to the curve for the *Sourabaya*, viz., the portion of the diagram that is shaded.

It is shown by the arc kh falling within the field of the diagram of the *Captain's* stability, that the righting arm of the *Sourabaya*, with centre of gravity at h , would be for these angles less than that of the *Captain*. The meta-centric depth of the centre of gravity was, in the *Captain*, 2 ft. 8 in.; with the centre of gravity at h in the *Sourabaya*, the meta-centric depth of the centre of gravity is $Mh = 2$ ft. 4 in. It may be thought that that would be quite right, the *Sourabaya* being a smaller vessel. The reverse of that is the proper relation; the smaller the vessel the longer should be the righting arm. The *righting moment* is the product of the length of the arm by the weight of the ship, and, if the spread of sail be as the square of the linear dimensions of the ship, and if the height of the centre of effort be in simple ratio to the linear dimensions, then equal lengths of righting arms will correspond with equal effective stability against a steady heeling force. But the stability of a vessel must be competent to resist the effects of sudden gusts of wind that act for a brief instant with overpowering force. The moment of heeling force may be for that instant in excess of the righting moment at that instant, and, if the moment of inertia of the weight of the vessel be sufficient to store up the work of the excess pressure before the vessel has heeled to a position beyond which the area of the margin of righting moment above that of steady pressure is less than the accumulated work in the transverse motion of the vessel, the vessel will right itself after the gust, unless another gust occurs before the inclination for steady pressure has been again reached. If the vessel has not that requisite amount of inertia, it will rotate more rapidly; and while the gust acts there will be more work done upon the vessel, and she will not right herself, after the gust passes she will be capsized by the action of the steady pressure and the unextinguished momentum imparted by the gust.

The effect of a gust of wind upon a vessel is in this way, *ceteris paribus*, nearly in the inverse ratio of its radius of gyration. Hence for vessels of large size the margin of stability diagram to counteract such sudden impulses is not required to be as great as in smaller vessels, where the radius of gyration is also much less.

The *Sourabaya*, with only the stability diagram of the *Captain*, would therefore be a much more dangerous vessel, because the radius of

gyration of the *Sourabaya* must be less than one half of that of the *Captain*.

The vessel's natural period of rolling is directly proportional to the length of the radius of gyration, and it is inversely proportional to the square root of the meta-centric depth of the centre of gravity. In the *Sourabaya* this depth cannot be materially less than that of the *Captain*, 2 ft. 8 in., or the vessel will capsize by the heeling force of the wind. If so, then, the period of rolling in the *Sourabaya* will be to that of the *Captain* as the radius of gyration of the *Sourabaya* to that of the *Captain*, or say one half of the *Captain's* period. She will be frequently amongst waves of little less than that period, and the induced rolling will in all probability capsize the vessel, especially if there is a beam wind at the time.

So far every feature of the *Sourabaya* is, in comparison with the *Captain*, adverse to the *Sourabaya*. There is a good deal in the management of a vessel; and if the *Sourabaya* could be shown to be a handier vessel than the *Captain*, the complexion of my report might be altered. The *Captain* had steam power; the *Sourabaya* is a sailing vessel. The *Captain* had a ship-shape hull under water, but the *Sourabaya* has not a ship-shape hull. The bluff bows will make her progress very slow, and the full stern will probably materially impair the action of the rudder.

The vessel has attempted the voyage, and has put back for alterations. She had no keel, and is now to have one. The addition of a keel acts in the same direction as the lengthening of the radius of gyration, but it will not reduce the angle of heeling produced by a steady pressure, and it will not assist the vessel to stand up under fore and aft canvas. It appears to me that the canvas she would require to make fair progress with a beam wind would, with a moderate breeze, capsize her. [If the vessel had been under our Act I would have recommended that she should be heeled experimentally to ascertain her actual stability.]

The companions and skylights, shown on the tracing, seem to be quite unsuitable for the voyage on a deck that will be so frequently swept by seas. The coamings are shown as only nine inches deep. I agree with Mr. Murray, the principal surveyor at Glasgow, who has reported this vessel, in all that he has written as to the want of protection for the crew, the insecurity of the stepping of the masts, and the general unmanageableness of the hull at sea.

J. MCFARLANE GRAY.

(The above report is taken from a recent Parliamentary paper.)

OUR PARLIAMENTARY RECORD.

Unseaworthy Ships, March 18, 1875.—Mr. PLIMSOLL asked the President of the Board of Trade whether his attention had been called to the fact that the *Marquis of Lorne* sailed from Glasgow recently so loaded that she had only 2 ft. 2½ in. of side (her depth of hold being 17 ft. 2-10ths.), although she had the dangers of the Bay of Biscay to encounter; to the case of the *Arthur*, also from Glasgow, having a depth of hold of 17 ft. 3 in., with a freeboard of only 2 ft. 6 in. on the port side, and 2 ft. 1 in. on the starboard, she also having to cross the Bay of Biscay; and to the case of the *Dania*, which sailed from Shields for Malta with a depth of hold of 16 ft. 3 in., and a clear side of 14 in. only on the port side, and of 3 ft. 1 in. on the starboard, and whether any steps were taken by the Board of Trade to prevent the sailing of these ships in this condition.—Sir C. ADDERLEY: The freeboard of the *Marquis of Lorne* was as stated in the question, but the length of the poop and the fore-castle added so materially to the buoyancy of the ship, that it was not considered right to stop her. The draught of water as shown by these returns, which are communicated to the honourable member, taken alone, is a very imperfect and misleading test of seaworthy loading. To stop a ship on that test alone would be unjust, mischievous, and leading to costly reversal. The principal Surveyors of the Board of Trade are at this moment on circuit, with a view of establishing a practice on which the Board of Trade may satisfactorily act in this difficult question of overloading. In the case of the *Arthur*, the ship was stopped by the Board of Trade, and lightened of 130 tons of cargo. In the case of the *Dania*, the information arrived by telegraph on Saturday night, and was received too late to be acted upon even if desirable. The question is one of list—the mean of the two freeboards would be sufficient if, after starting, the ship was trimmed.—Mr. PLIMSOLL next asked the President of the Board of Trade whether a case had recently come to his knowledge in which a shipowner discharged a captain of a ship for refusing to take her to sea without some means were adopted to prevent her cargo from shifting, on the ground that she would inevitably founder if he did, she being loaded in bulk with Indian corn; whether the owner did not thereupon engage another captain, and insist upon sending the ship to sea, which subsequently foundered with all hands; and whether he would order a prosecution of the shipowner under Section 11 of the Merchant Shipping Act, 1873.—Sir C. ADDERLEY: I gather from the question that I know the case referred to, though it is not named, and if I am right the case has been under investigation at Greenwich, and the result is to disprove the rumour as stated in the question. The ship capsized, as is known from the

captain and other survivors, and the report of the inquiry will be published shortly.

The "Marie" Steamship, March 19th.—Sir W. LAWSON asked the President of the Board of Trade whether his attention had been directed to the case of the *Marie* steamship, which left Southampton for the West Coast of Africa in the month of November last, but ultimately arrived, in a sinking state, at Santander, where she now was, and whether he would consent to place upon the table all correspondence which the Board of Trade had received on the subject.—Sir C. ADDERLEY: The *Marie* was a new ship, measured for tonnage only at her starting from Southampton by the officer of the Board of Trade employed for that purpose. No case arose for a Government survey, the *Marie* not being a passenger ship, and no question of her unseaworthiness having come to the notice of the Board of Trade. A question has arisen as to allowing any ships of this class built for river or coast navigation abroad to proceed to sea in the winter months. The correspondence relating to the *Marie* may be moved for, together with the correspondence relating to the *Mary* and *Chusan*, of the same class.

The Board of Trade, March 22nd.—Mr. PLIMSOLL asked whether the President of the Board of Trade would consider the advisability of keeping some officer in attendance at the Board of Trade offices in Whitehall during the night to act immediately upon such telegrams as might arrive from the Board of Trade surveyors at the ports, asking for instructions in cases in which ships were apparently dangerously overloaded, and which were to go to sea in that condition?—Sir C. ADDERLEY: The office-keeper and porter sleep at the Board of Trade every night, and they receive any telegrams which arrive from surveyors at night and forward them immediately to the officer responsible for the subject of them, who is often so called up at night, and has sometimes himself to go on inspection of a ship going to sea. It would not be advisable, in the language of the question, to have a staff of officers kept every night at Whitehall qualified to act themselves immediately on such telegrams.—Mr. PLIMSOLL gave notice that he should repeat his question, because on calling at the Board of Trade at night he had found telegrams which would not have been delivered but for his calling.

The Board of Trade, March 23rd.—Mr. PLIMSOLL hoped that the right honourable gentleman would be able to qualify in some degree the answer he gave yesterday, and would therefore ask once more whether he would consider the advisability of keeping some officer in attendance at the Board of Trade offices in Whitehall during the night to act immediately upon such telegrams as may arrive from the Board of Trade surveyors at the ports asking for instructions in cases in which ships are apparently dangerously over-loaded, and which are about to go to sea in that condition?

—Sir C. ADDERLEY: I am afraid I can do no more than repeat my answer of yesterday. The office-keeper and porter remain at the Board of Trade at night and receive any night telegrams, and as a general rule forward them to the officer responsible for the subject of the telegram. It would be impossible for such responsible officers to be themselves every night at the Board of Trade to issue instructions to surveyors, nor could a mere telegram be generally acted on immediately to take so serious a step as the stopping of a ship. To stop a ship on a report of overloading is a more difficult and delicate matter than the honourable member seems to think, nor could the collectors of customs be at hand all night for the purpose; but I may tell the House that appointments are being made of a superior class of superintendents or surveyors at the principal ports who may be trusted in special cases to stop a ship without first referring to the Board of Trade.

Overloading.—Mr. PLIMSOLL asked the President of the Board of Trade what result followed the stoppage, at 3.30 a.m. on Saturday, the 13th, of the steamship *International*, loaded with telegraph cable, and which was stopped at his (Mr. Plimsoll's) instance, and if he would say what was the result in each of the three other cases stopped at the same time at the instance of the Marine Secretary.—Sir C. ADDERLEY: The honourable gentleman brought to the Marine Assistant Secretary of the Board of Trade, at 3 a.m. on the 13th—it was very much to the honourable member's credit—a telegram that he had received from a seaman that the *International* was overloaded. A telegram to the same effect came from the insurers to the Board of Trade the same day. The first information was acted on immediately by telegram, and the ship was stopped and lightened after survey by two most competent surveyors. Three telegrams were received the same night—one about the *Gazelle*, but she had left the port of Shields before she could be detained; the second about the *Nuphar*, which was detained, lightened, and properly trimmed; the third about the *Elizabeth*, which was detained.

Inflammable Cargoes.—Mr. D. JENKINS asked the President of the Board of Trade whether any steps had been taken to prohibit the shipment of oils, spirits, and other cargo of an inflammable nature in sailing vessels carrying large numbers of passengers under the Emigration Acts.—Sir C. ADDERLEY: The 29th section of the Passengers' Act, 1855, gives power to the Board of Trade both to stop passenger ships if loaded with such shipments dangerous to the health or lives of the passengers or safety of the ship, or if the cargo is not stowed and secured to the satisfaction of the officers of the Board of Trade. It has, since the case of the *Cospatrick*, been under the consideration of the Board of Trade whether any general regulations on the subject can be made in the interests of safety, compatible with the necessities of the trade.

Coasting Vessels.—Dr. CAMERON asked the President of the Board of Trade whether his attention had been directed to the serious loss of life occurring in cases of the shipwreck of coasting vessels through the inadequacy of their supply of boats; whether the Board of Trade have had brought before them any form of boat by the general adoption of which this loss of life might be reduced to a *minimum*, and whether they purpose taking any steps to insure its adoption in future?—Sir C. ADDERLEY: The attention of the Board of Trade has been directed to the loss of life occurring in small coasting vessels which have foundered. The Board of Trade have had submitted to them a form of raft invented by Mr. Holmes, the adoption of which by small coasting sailing vessels they trust will conduce to saving life.

Dover Pier and Harbour Bill, April 5th.—After some discussion, this Bill passed the second reading, and was referred to a Select Committee.

Merchant Shipping Acts Amendment Bill, April 6th.—Mr. GOURLEY asked whether the President of the Board of Trade meant to proceed with this Bill; and, if it was to be withdrawn, whether he intended to introduce an amended Bill, based upon the information and opinions of practical seafaring shipowners, shipbuilders, and seamen, with whom he held interviews during his recent visit to the north-eastern ports.—Sir C. ADDERLEY could only suppose from the form of this somewhat extraordinary question that the hon. gentleman's wish was father to the thought. He must refer the hon. gentleman to the notice-paper for Thursday, where the Bill stood for second reading. He should have regretted that the pressure of of business had delayed the Bill so long, but for the opportunity thereby afforded him of having interviews with the three classes of persons indicated in the question; and he was glad to say that in the proposals he was making he had the concurrence of the seamen's best friends and of the best shipowners throughout the country.

Training-Ships and Schools' Bill, April 6th.—Capt. BEDFORD PIM moved the second reading of this Bill.—Mr. CROSS sympathised with the objects of the hon. and gallant member in introducing it, but felt compelled to insist on the advisability of doing what was aimed at, if it were possible, either under the provisions of the Reformatory and Industrial Schools Acts, or by amending those provisions, if amendment could be shown to be necessary and desirable. In these institutions boys were being trained to industrial pursuits, but one clause of this Bill would go further than the Acts, by compelling a boy to adopt a trade, even against his will; and that he could hardly agree to. There were several ships employed under both Acts, and, if more were wanted, he should be glad to render assistance in obtaining them. In the five training-ships there were 14,000 boys. These had been established as training-schools, at an expense of £50,000. They were doing much good, and perhaps they would do

more. Hitherto, part of the work had been done by private benevolence; but this Bill would throw a burden on the rates, which was another reason for seeing whether its object could not be accomplished by an extension of the system at present in operation. For these reasons, he trusted the hon. member would withdraw the Bill, and would confer with him at the Home Office as to any necessary amendment of the Acts named.—The Bill was withdrawn.

Unseaworthy Ships, April 8th.—Mr. PLIMSOLL asked at whose instance the Board of Trade Inquiries had been held in—say, the last twenty cases; if on the motion of the Department, on what principle of selection they proceeded; if upon requisition, from whom they came.—Sir C. ADDERLEY: There is an ambiguity about the question, whether it refers to surveyors reports of unseaworthy ships or inquiries into wrecks. Whichever is meant, it would be better answered by an actual return, which, if the hon. member will move for, unopposed, I will take care shall be immediately presented to the House. It would be difficult to give such information in the form of an answer to a question.

The Arctic Expedition.—Mr. HUNT, in answer to Mr. HANBURY TRACY, said he was sorry it was not possible to appoint a chaplain to accompany the Arctic Expedition, for want of cabin accommodation. There had been great difficulty in providing for the crews selected.

The East African Slave Trade.—Mr. BOURKE, in reply to Mr. HANBURY, said the papers which had been presented to the House had been printed, and were in course of distribution to members. The changes made in the Consular Service on the East Coast, and on the coasts of the Red Sea, would be stated when the question came formally before the House on the motion of the hon. member.—Mr. HUNT, in reply to Mr. HANBURY, said that in the course of the first half of last year five vessels were employed in suppressing the slave trade on the East Coast of Africa, and in the latter half seven vessels were employed. No alteration would be made this year. The *Shearwater* was under orders for home, and it was proposed to send out another vessel in the summer to strengthen the squadron there.

The Merchant Shipping Acts Amendment Bill, April 8th.—After a lengthened debate, this Bill passed the second reading, it being understood that considerable discussion would take place and amendments be moved in Committee.

The Scotch Lighthouse Board, April 9th.—Dr. CAMERON asked the President of the Board of Trade whether his attention had been called to an appointment recently made by the Board of Northern Lighthouses to the secretaryship of that Board; whether attempts had been made prior to the resignation of the last secretary to obtain the sanction of the Board of Trade to a larger salary than had hitherto been paid in the case of

newly-appointed secretaries; whether, during the absence on various occasions of the last secretary, his duty was satisfactorily performed by another official of the Board, who was a candidate for the appointment; and whether there were any reasons for appointing to the office an advocate of no experience in the work, and overlooking the claims of an experienced servant.—Sir C. ADDERLEY: The Commissioners of Northern Lighthouses have reported to me that they have recently filled up the vacancy in the office of secretary, caused by the retirement, after forty-nine years' service, of Mr. Cuninghame. Prior to that gentleman's retirement the Commissioners endeavoured to induce the Board of Trade to increase the salary of future secretaries beyond the amount which the Board had recommended. The amount recommended by the Board of Trade, and the amount desired by the Commissioners, were both in advance of the salary paid to Mr. Cuninghame when first appointed secretary. The Commissioners inform me that during the absence of the secretary the routine business of the office was done by one of the clerks, but the duties of the office of secretary were not discharged by the official referred to in the question. The Commissioners state that a large majority of them considered the gentleman recently appointed to possess the highest qualifications in every respect for the office, and it was their act not appointing the official referred to.

Pensions to Seamen, April 13th.—Mr. STEWART asked the President of the Board of Trade whether Government was prepared to recommend to Parliament an increased vote for pensions of those seamen (and their dependents) who had contributed to the Merchant Seamen's Fund, and had complied with the necessary requirements entitling them to receive pensions.—Sir C. ADDERLEY said: The Government have no intention of recommending to Parliament an increased vote for pensions to seamen and their dependents who have contributed to the Merchant Seamen's Fund. The rates of pension now in force were fixed after the passing of the Merchant Seamen's Winding-up Act in 1851, under which the Government undertook the administration of the Merchant Seamen's Fund. They were the average of the rates existing at the different ports at which the funds were formerly administered by local trusts, many of which had become bankrupt. The contributions by seamen to the fund have been quite inadequate to meet the payment of the pensions, and the cost of taking over the fund has been very great already to the country—about a million sterling. It will still be many years before these pensions run out.

The Arctic Expedition, April 13th.—Mr. W. HUNT, in reply to Mr. HANBURY-TRACY, said the Arctic Expedition was to consist of two ships, one of which would carry sixty-two officers and men, and the other fifty-nine, and the ships were intended to winter 200 miles apart. None

of Her Majesty's ships carrying less than 170 men were provided with a chaplain; but he should have been glad to have treated this case exceptionally, and appointed a chaplain to each ship if he could have seen his way to do so. In the first place, there was want of space, and in the second, there was no instance of a chaplain having been appointed to an expedition of this kind except in 1821. In that case a gentleman had been appointed astronomer to the expedition; but before sailing he took holy orders, and he was therefore appointed chaplain as well as astronomer. Each of the ships in the forthcoming expedition were to carry stores and provisions for three years, and, as might well be supposed, these would occupy considerable space in the ships. The space in the holds had been further curtailed by the internal strengthening which they had received in order to resist the ice. Sledging parties had also to be accommodated, it being calculated that five sledging parties would have to be equipped from each ship. In addition there were two doctors to each ship, and the result was that there was only room for one scientific gentleman on board each vessel. The hon. member was desirous that these gentlemen should not accompany the expedition, and that two others, combining scientific qualifications while also being in holy orders, should be chosen. But these gentlemen had been chosen by the Royal Society for their peculiar fitness, and it would raise a difficulty not to allow them to go. Altogether, he regretted to say that the space at their disposal would not permit of chaplains being appointed to the expedition.

Mr. CHILDERS inquired how many naval officers there would be in each ship.—Mr. W. HUNT replied there would be a captain, four lieutenants, and one sub-lieutenant.

The Arctic Expedition, April 16th.—Mr. HUNT, in answer to Mr. M. STEWART, said: I stated to the House a few days ago the great difficulties of making any arrangement for the accommodation of a chaplain on board either of the Arctic ships. The only way to make room for one is to displace an officer from the establishment already approved. Considering that this establishment was settled by a committee of experienced Arctic Officers, I am taking upon myself very great responsibility in disturbing it. But after much deliberation I have determined to cancel the appointment of the two assistant paymasters—one of whom is going as acting paymaster—of each ship, and to appoint a chaplain instead, making the best arrangement I can for the discharge of the very important duties of the officers who will be displaced.

Board of Trade Certificates, April 16th.—Colonel BERESFORD, asked the President of the Board of Trade why, under the Merchant Shipping Act of 1854, those Naval Officers who had passed their examination for Lieutenant and Navy Lieutenant should only be entitled to a certificate

of service as master mariner, which certificate was exceedingly disadvantageous to them when in merchant employ, as it prevented their commanding emigrant ships, and in many cases, kept them out of valuable employment; and whether there would be any objection to granting such officers who had passed the requisite examination to qualify themselves for the highest position in Her Majesty's Navy a certificate of competency as master mariner on producing such certificate of examination.—Sir C. ADDERLEY said certificates of service are given as stated in the question under the 135th Section of the Merchant Shipping Act of 1854. Examinations for certificates of competency under the 134th Section, are examinations specially directed to the requirements of the Merchant Service. It appears to me to be necessary that Naval Officers who wish for certificates of that description should pass that examination.

Proposed Harbour of Refuge in the British Channel, April 16th.—On the motion of Mr. MONK a discussion arose upon this subject.

PARIS EXHIBITION, 1875.

AN International Exhibition, comprising every description of machinery, apparatus, implements, &c., employed on board ship, in fisheries and all other sea and river industries, will be held in Paris, during the year 1875, under the patronage of a highly-influential Commission, aided by committees for groups and classes, and foreign delegates.

The Exhibition will take place in the Palais de l'Industrie, Champs Elysées, in which was held the Paris Universal Exhibition of 1855; it will be opened on the 10th July, and closed on the 15th November.

The shortness of the time intervening prior to the opening, renders it desirable that the utmost publicity should be given to the arrangements with a view to securing the due representation of British industry, and intending exhibitors should apply, without delay, to Mr. Edmund Johnson, *Commissaire Délégué*, 8, Castle Street, Holborn, London.

The following are the articles, &c., which are to be exhibited :—

GROUP I.—PRODUCTS OF SEAS, RIVERS, AND LAKES.

Class 1.—Fish and aquatic plants, preserved in any way as food.

Class 2.—Preparation of fish.—Models of curing establishments.—Apparatus, plant, salt, and other materials employed.

Class 3.—Aquatic products used as medicines, and chemical extracts

thereof.—Tortoiseshell, pearls, mother-o'-pearl, ambergris, coral, sepia, &c., used in the arts.—Chemical extracts from seaweed, marine salt, &c.—Ornamental marine plants.—Cod-liver, seal, and other oils.—Whale-bone, skins, sponges, &c.—Seaweed, madrepore, sand, fish-refuse, &c., used as manure.

GROUP II.—IMPLEMENTS AND PROCESSES USED IN FISHERIES.

Class 4.—Nets, lines, hooks, knives, harpoons, natural and artificial baits, &c., used in deep sea fisheries.

Class 5.—Nets, oyster dredges, baits, implements, &c., used in coast fisheries, and for obtaining sponges, coral and pearls.

Class 6.—Implements, tackle, and baits, used in river and lake fishing.

Class 7.—Apparatus and processes employed in the breeding and protection of fish, oysters, aquatic birds, &c.—Fish tanks, reservoirs, and aquariums.—Fountains and decorations.

GROUP III.—GENERAL.

Class 8.—Models of sailing and steamvessels, tugs, well-boats, &c.—Models and drawings of parts of vessels, rigging and apparatus, figure-heads and ornaments, paddle-wheels, screws, marine engines, boilers, &c.

Class 9.—Specimen sections of parts of wooden or iron vessels.

Class 10.—Masts and rigging in wood, iron, and hemp; sails, &c.

Class 11.—Cordage of all kinds, in hemp, iron, or other materials.

Class 12.—Marine machinery and accessories.—Tubes, boilers, tanks, condensers, fuel economisers, air pumps, cocks, valves, regulators, reversing apparatus, donkey engines, feed-pumps, injectors, gauges, manometers, salinometers, thermometers, barometers, dynamometers, indicators, &c.

Class 13.—Boats of all kinds, with or without fittings, rigging, &c.

Class 14.—Anchors, cables, chains, capstans, &c.—Pumps, gangways, boat-lowering tackle, steering apparatus, means of preventing fouling at sea; articles in galvanised iron; balloons, flags, and signals.

Class 15.—Chronometers, compasses, sextants, &c.—Apparatus for taking soundings, electrical and other communicators.—Signal guns, fuses, &c.—Navigation and fishery charts.

Class 16.—Furniture, upholstery, carpets, mats, kamptulicon, linoleum, felting, "Japanese" hangings, beds, cots, hammocks, bedding, leather, oilcloth, blinds, &c.—Glass, earthenware, china, cutlery, electro and Britannia metal wares, stoves, lamps, clocks, hour-glasses, knife-cleaners, washing machines, tubs, pails, &c.

Class 17.—Cereals of all kinds.—Flour, yeast, baking powder, corn flour, biscuits, &c.—Potted and otherwise preserved meats, extracts, soups, vegetables, fruits, eggs, milk, butter, cheese, oils, &c.—Cyder,

beer, and fermented liquors of all kinds; liqueurs, syrups, fruits in spirits, confectionery; tea, coffee, cocoa, chocolate, cocoa and milk, and other like preparations; vinegar, mustard, spices, sauces and condiments of all descriptions; essences.—Ships' hearths and cooking utensils, ovens, distilling apparatus, &c.—Pens, coops, cages, &c., for live animals.

Class 18.—Yarns, threads, and tissues of all kinds.—Clothing.—Hosiery, mercery and smallwares, hats, caps, bonnets, boots and shoes. Travelling rugs and necessities.—Apparatus and baggage for naturalists, geologists, tourists, and colonists.—Tents, canteens, portable arms and accessories.—National dresses of sailors and fishermen.

Class 19.—Medicine chests, medical preparations, surgical instruments, apparatus, &c.—Means of ventilation, sanitary apparatus and contrivances, disinfectants, insect destroyers, &c.

GROUP IV.—MATERIALS AND PROCESSES.

Class 20.—Materials for, and processes of, net making by hand or by machinery.

Class 21.—Materials for, and processes of, making cables, cordage, wire-rope, slow matches, tow, &c.

Class 22.—Materials and means for making sailcloth, and bleaching of the yarns; sewing machines.

Class 23.—Pulley, oar, scull, and steering gear manufacture.

Class 24.—Machines, tools, and materials for making anchors, cables, chains, &c.

Class 25.—Materials, machinery, and tools used in wood and iron shipbuilding.

Class 26.—Drawings and models of ports of refuge, basins, moles, jetties, dams, flood-gates, floating docks.—Bricks, tiles, slate, cement, and other materials.—Lighthouses, signals, rockets, buoys, &c.—Telegraphy, as applicable to lighthouses, signal-masts, and semaphores.—Coloured, rotatory, and electric lights.

Class 27.—Apparatus and other means of loading, stowing, unloading, and transshipping; fixed and travelling cranes, hoists, masting sheers, &c., modes of packing; boxes for preserved provisions, barrels, casks, &c.—Special vehicles for the shipping and unshipping of goods.

GROUP V.

Class 28.—Life-boats, rafts, life-saving apparatus, swimming appliances, and bathing costumes; impermeable and incombustible clothing, &c.—Apparatus for raising sunken vessels.—Diving bells, dresses, and apparatus.—Means of submarine illumination.—Models of life-saving stations and swimming schools.

GROUP VI.

Class 29.—Arms, implements, and equipments for maritime and coast sport; and the products thereof, such as furs and skins, whether raw, dressed, dyed, or stuffed, hair feathers, horns, teeth, &c.

GROUP VII.—NATURAL OR MANUFACTURED PRODUCTIONS.

Class 30.—Metals of all kinds, rough and wrought, metallic alloys, ships' sheathing, &c.—Ironmongery, tools, copper, tin, and other ware. Samples of coal and other fuel, raw or prepared.

Class 31.—Timber prepared for naval construction, tents, and coopers' work; dyewoods, cork, textile bark; tanning materials, colours, perfumes, resins; brooms, brushes, scoops, &c.

Class 32.—Agricultural products, as textile fibres, oils, wax, and resins.—Tobacco in the leaf or manufactured, cigars and snuff.—Starch, blue, black lead, German tinder, &c.—Bread and biscuit-making machinery, mechanical ovens, coffee roasters, ice machines, and refrigerators.

Class 33.—Marine salt, greases, chemically prepared tallow, candles of all kinds, soaps, chemical lubricants, varnishes, dressings for marine engines, &c.—Pitch, tar, anti-corrosive paint, blacking, &c.—Compositions for boilers.—Artificial manures.—Leather, raw and dressed, buckets, hose, &c.—India-rubber and gutta-percha.—Natural and artificial mineral waters.

GROUP VIII.—APPLICATION OF THE SCIENCES AND ARTS TO EDUCATION,
AND TO PHYSICAL AND MORAL IMPROVEMENT.

Class 34.—Retrospective:—Apparatus and tackle used in fishing, models and drawings of ships, fishing boats, &c., from the earliest ages.—Ancient costumes of sailors and fishermen.—Applications of maritime products.—Ornamental shells, &c.—Fish-breeding and oyster-culture amongst the Romans and other ancient nations.

Class 35.—Books of all kinds, ancient and modern, relating to the objects of the exhibition.—Accounts of missionary enterprises.—Special periodical publications.—Drawings, atlases, albums, &c.

Class 36.—Stationery, ink, account books, diaries, office accessories, pocket-books, &c.

Class 37.—Reproductions by drawing, painting, photography, modelling, &c., of subjects referring to naval and aquatic industry.

Class 38.—Musical instruments of all descriptions.

Class 39.—Geometrical, astronomical, optical, meteorological, hydrographical and other instruments; drawings and models of the same.—Herbals, &c.

Class 40.—Maps, charts, globes, and relief plans.—Apparatus for the study of cosmography.—Astronomical and navigation tables.

Class 41.—Methods of teaching navigation, with means employed.—School fittings, materials, &c.

Class 42.—Arrangement and fittings of ships, cabins, berths, &c., with a view both to convenience and health.

LIGHT-SHIP TO MARK THE ROYAL SOVEREIGN SHOAL.

THE Royal Sovereign Shoal lies directly in the track of vessels proceeding between Beachy Head and Dungeness, and on the shoalest part there is only a depth of ten feet water. This danger has hitherto been marked by a large and conspicuous bell-buoy, but the crowds of vessels that are now continually passing close to the shoals, especially at night time, render it most desirable that some mark more useful than a buoy should be placed to help vessels to go clear of the shoal itself, and also to avoid running into Dungeness West Bay. It will therefore meet with great satisfaction among nautical people to hear that a light-ship has actually been placed outside the shoals. Shipowners will be much more pleased at this (although they will have to pay light dues) than they would be at the establishment of a compulsory load-line or unlimited Government surveys, and it will no doubt assist in the saving of life at sea far more effectually than any such provisions. The exact position of the vessel is stated to be in twelve fathoms water, three-quarters of a mile to the southward of the Four Fathom Patch called the Southern Head; the marks and bearings are given in our advertising columns. The bell-buoy is to be removed in the middle of the present month.

The importance of this new light cannot be over-estimated, for it will assist vessels to turn the dangerous corner of Dungeness with much greater ease and safety. It will also lead vessels right into the cruising ground of the pilot cutters, and thus enable them to obtain pilots more readily; and it is probable that the number of wrecks in Dungeness Bay will be materially diminished.

The character of the light is of a somewhat novel description. It may be called white revolving, but its distinctive peculiarity is that it gives a triple flash, or, in other words, three flashes in quick succession, with about half-a-minute interval between each triple flash. The three flashes are all shown in about twenty-three seconds; then follows an interval of darkness of about thirty-seven seconds' duration, thus making the triple-flash to occur once every minute. It is said that the distinctiveness of this

arrangement is very marked, and that there is no danger of mistaking it, especially as the light is reported to be exceedingly powerful, more so, indeed, than that of any light-ship round the coast. It certainly seems simple enough, and probably will be understood by those for whose use it is intended.

In order to make this new light-ship self-supporting, shipowners will have to pay a small toll for any of their vessels passing or deriving benefit from it, and this the majority of owners will cheerfully pay. The following is an extract from the Order in Council authorising the levying of the toll:—

“ROYAL SOVEREIGN SHOAL LIGHT-VESSEL.—At the Court at Windsor, the 17th day of March, 1875. Present, the Queen's Most Excellent Majesty in Council.

“Whereas by the four hundred and tenth section of ‘The Merchant Shipping Act, 1854,’ it is enacted, that upon the completion of any new lighthouse (in which term are included floating and other lights exhibited for the guidance of ships), Her Majesty may, by Order in Council, fix such dues in respect thereof to be paid by the master or owner of every ship which passes the same, or derives benefit therefrom, as Her Majesty may deem reasonable, and may from time to time alter the amount thereof, and that such dues shall be paid and collected in the same manner, by the same means, and subject to the same conditions in, by, and subject to which the light dues authorized to be levied by the same Act are paid and collected:

“And whereas the Corporation of Trinity House of Deptford Strond are about to place a light-vessel on the Royal Sovereign Shoal, off Beachy Head, on the south-east coast of England, and to exhibit a light therefrom:

“Now, therefore, Her Majesty, in exercise of the powers vested in her by the said recited Act, by and with the advice of her Privy Council, is pleased to direct, that upon the exhibition of the said light there shall be paid in respect of the said light-vessel for every ship, whether British or foreign, which may pass or derive benefit from such light-vessel, the toll of two-sixteenths of a penny per ton of the burthen of every such ship as aforesaid for each time of passing or deriving benefit therefrom if on an oversea voyage, and sixpence per vessel for each time of passing or deriving benefit therefrom if on a coasting voyage.

“The said toll shall be levied by the Corporation of Trinity House of Deptford Strond, subject to the regulations and exceptions contained in the New Consolidated Tables of Light Dues, sanctioned by Orders in Council, dated respectively the twenty-fourth day of October, one thousand eight hundred and seventy, and the sixteenth day of May, one thousand eight hundred and seventy-one, and in an Order in Council,

dated the twenty-first day of February, one thousand eight hundred and seventy-four, and subject also to the gross abatement or discount of sixty per centum mentioned in the last-named Order in Council.

“EDMUND HARRISON.”

BOOKS RECEIVED.

The Newcastle (N.S.W.) Nautical Almanac and Guide to the Port of Newcastle, for the Year 1875. Newcastle (N.S.W.): R. C. Knaggs & Co., Hunter Street. 1875.

NAUTICAL affairs in New South Wales must be progressing when Newcastle publishes its tenth Annual Nautical Almanac. We were exceedingly glad to receive a copy of this publication, and to find that it contains a vast quantity of very useful information concerning sailing directions and other matters connected with the locality, which will be found of value by shipmasters frequenting the coasts of the Colony.

Memoir of the Life of Admiral Sir Edward Codrington, with Selections from his Public and Private Correspondence. Edited and abridged from the larger work by his daughter, Lady Bouchier. London: Longmans. 1875.

THIS abridgement from the larger work is exceedingly ample, and gives a clear insight into the character of a distinguished man, whose example is worth following. Particulars of the gallant Admiral's character and life are shown chiefly through the medium of his correspondence, public and private, with descriptive connecting links from the pen of his daughter, the authoress. We fully sympathize with the object of the work, and have no doubt that young naval officers, on reading the story of Sir Edward Codrington's brave and eventful career, will be stimulated with the desire to go and do likewise. As a biography, the work is replete with details of the gallant Admiral's life; but it is very evident that the hand which worked the materials together, was guided by a feeling of devoted and affectionate prejudice. In this instance, the result is not unsatisfactory, but it would not do for all memoirs to be written by such fond and partial biographers.

We have also received the very useful quarterly volume of the *Annales Hydrographiques* from the *Dépôt des Cartes et Plans de la Marine*, Paris.

The *Rivista Marittima*, for February and March, with various supplements. This is a nautical periodical published at Rome, and appears to be very full of valuable information.

The Geographical Journal, entitled *Cosmos*. Edited by Guido Cora. Published at Turin. Another Italian publication, containing a great deal of interesting geographical news. Certainly the Italians are not asleep, if we may judge from their nautical and geographical literature, which is very vigorous. The country is evidently doing well under Victor Emanuel.

List of Lighthouses, &c., &c., in the United States. Corrected to January, 1875.

EVERY year sees the number of lighthouses and other sea-marks upon the American shores improved in efficiency and increased in numbers. It is well to note that the arts of peace flourish there as elsewhere.

Report of the Proceedings of the Conference on Maritime Meteorology, held in London, 1874; and Report of the Permanent Committee of the first International Meteorological Conference at Vienna, 1874. London: Potter. 1875.

THESE are valuable and useful official publications.

THE USE OF THE BAROMETER.

[We extract the following very clear directions for handling barometers at sea from some instructions proposed to be issued by the Meteorological Department to masters of merchant vessels. We are very sure that the information and advice given will be of service to many of our readers.—Ed.]

In handling barometers it should always be remembered that they are delicate and expensive instruments. The result of rough treatment is breakage, and for scientific purposes, observations from an instrument improperly repaired and not verified are useless.

The barometer should be fixed in a good light for observing, but out of the reach of sunshine or the occasional heat of a fire or lamp. The ill effects of artificial heat are, however, nearly completely obviated by taking a careful reading of the attached thermometer at the time of observation of the barometer. It should hang where it can swing freely, and be out of the reach of passengers and others passing near it, so as to be carefully protected from injury. The height of the cistern or lower

part of the barometer above the level of the sea should be ascertained and noted in the Log at the beginning of each passage.

A bracket and screws for suspending the barometer are in its box. Screw up the bracket where the barometer is to hang. Then lift the instrument carefully out of its box, bend back the hinged part of the suspension arm, and slip it into the bracket. (The holding screws should not be driven quite home until the instrument is in position.) The mercury will then fall gradually, and the instrument will usually be ready for observation in about an hour; but as local temperature affects the instrument slowly, it may be well not to record observations from it for some hours after first fixing it. In a well-boiled tube, the mercury hangs adhesively sometimes, and will not quit the top of the tube. If, after an hour or so, the mercury has not descended to its proper level, tap the cistern end rather sharply with the hand, or make the instrument swing a little in its gimbals. This difficulty very rarely happens, and no precise mode of treatment can be laid down: the remedy lies much at the judgment of the observer, who should use such means as his discretion may lead him to deem best to cause the mercury to fall. The box should be safely stowed away.

Whenever it may be necessary to take down a barometer and stow it in its box, *the vernier should be brought down to the bottom of the scale*. Then, having lifted the instrument out of the bracket, place or hold it in an inclined position for a few minutes, so as to allow the mercury to flow *very gently* up to the top of the glass tube. It should then be taken lengthwise and laid in its box. It is now portable, without any other adjustment whatever; and may be carried with the *cistern end upwards or lying flat*, but it must not be subjected to jars or concussions.

Experience shows that it is advisable to give some directions as to packing barometers. The instrument having been taken down and placed in its box as directed, if it is to be sent by rail or other conveyance, and will probably have to be handled by persons unacquainted with its delicate and peculiar construction, should be placed in a packing-case with two or three inches of soft elastic packing all round it, as hay, straw, shavings, tow, or paper-cuttings. The lid of the case should *never be nailed down*, but always fastened with screws. The address label should be *pasted* (not nailed) on the end of the case which is next the cistern, or lower end of the barometer, and it should be marked "Glass and fragile instruments. Keep this box lying flat, or carry it this end upwards." Of course, if two or more barometers are packed together, the cisterns should all be placed at this marked end of the case. Barometers should be transmitted by passenger train, and, in short, always by whatever route or conveyance affords the most safe

transit. Transshipment or change of conveyance should be avoided if possible.

Barometer Vernier.—In order to facilitate the taking of accurate readings of the height of the barometer, a small moveable scale, called a vernier, is attached to the instrument.

The general principle of this moveable dividing scale is that the total number of the smallest spaces or sub-divisions of the vernier are made equal, taken together, to one less or more than that number of the smallest spaces in an equal length of the fixed scale. In standard barometers the twenty-five spaces in the vernier are equal to any twenty-four spaces of the scale, which are each half a tenth or five-hundredths of an inch; therefore, a space on the scale is larger than a space on the vernier by the twenty-fifth part of $\cdot 05$, which is $\cdot 002$ inch, consequently the vernier exhibits differences of $\cdot 002$ of an inch.

The vernier is moved by a rack and pinion. Turn the milled-head of the pinion so as to bring the *lower* edge of the vernier exactly on a level with the top of the mercurial column. When set properly, the front-edge of the vernier, the top of the mercury, and the back edge of the vernier, should be in the line of sight, which line will thus just touch the *middle* and *uppermost* point of the column. Great care should be taken to acquire the habit of reading with the eye exactly on a level with the top of the mercury—that is, with the line of sight at right angles to the scale.

A piece of white paper placed behind the tube, so as to reflect the light, assists in setting the vernier accurately. A small bull's-eye lamp, held behind the instrument, enables the observer to get a correct setting at night. When observing the barometer, it should hang *freely*, not being inclined by holding, or even by a touch; because any inclination will cause the mercury to rise in the tube.

Every long line	{ cut on the barometer scale }	a tenth	($\cdot 100$) of an inch.
„ short „	{ corresponds to - - }	five hundredths	($\cdot 050$) „
Every long line	{ cut on the vernier scale }	one hundredth	($\cdot 010$) „
„ short „	{ corresponds to - - }	two thousandths	($\cdot 002$) „

HYDROGRAPHIC.

SOUTH INDIAN OCEAN.—MAURITIUS ISLAND.

The following information relating to the dangers off Canonnières point, island of Mauritius, has been received from Commander William J. L. Wharton, H.M. Surveying vessel *Shearwater*, 1874:—

Canonnières Point.—A close search was made during one day by three boats from H.M.S. *Shearwater*, for the reef which has hitherto been supposed to extend $1\frac{3}{4}$ miles off Canonnières point, but no danger could be found beyond the Whale rock; neither was the existence of any other danger off the point known to the local authorities.

Whale Rock, has 6 feet on it at low water, lies one-third of a mile from the lighthouse on Canonnières point, and about 270 yards from the nearest dry rocks.

Clearing Mark.—The western extreme of Gunner's Quoin Island kept in line with the centre of Serpents Island, bearing N.E. by E. $\frac{3}{4}$ E. by day, or Flat Island light, bearing N.E. by E. $\frac{1}{2}$ E. at night, will lead clear to the north-westward of Whale rock.

Note.—As the currents are strong and variable in their direction near Canonnières point, mariners should be on their guard in this locality; and as ships have been wrecked on Whale rock by mistaking the *fixed* light on Canonnières point for the *flashing* light of the lightship off Port Louis, mariners are further cautioned.

CHINA SEA.—HONGKONG.

The following information, relating to the approaches to Hongkong, has been received from Staff-Commander T. H. Tizard, R.M., H.M.S. *Challenger*, 1874:—

Bunsan'siah Rock (Passage Rock).—This danger, in the southern entrance of the Capsingmoon passage, is a pinnacle rock awash at low water, having depths of 8 to 10 fathoms close around it.

From the centre of this rock, Ahunchue rock is in line with the south extreme of Chunghue island, bearing E. by N., and the east extreme of Cowechau island is in line with the west extreme of Lamma island, S. by E. $\frac{3}{4}$ E.

Lamma Island.—The sunken reef formerly said to extend from the north-west point of Lamma island was found not to exist; but a rock awash at low water lies N. by W. $\frac{1}{4}$ W., about one cable from the rock which is above water near the north-west point of Lamma island. In the channel between the rock awash at low water and the rock near Lamma

island there are depths of 2 to 3 fathoms, and 6 fathoms close outside the danger, decreasing to $5\frac{1}{2}$ fathoms at 4 cables west, and $5\frac{1}{2}$ fathoms about 6 cables north of it.

Clearing Marks.—The south-west point of Lamma island open of the west point, bearing S. by E. $\frac{1}{2}$ E., leads to the westward of the danger, and Tree island open of the north point of Lamma island, bearing E. $\frac{3}{4}$ N., leads to the northward.

Bokhara Rock, is a pinnacle rock with 18 feet water over it, situated about 8 cables north-eastward of cape D'Aguilar, on the north-east edge of a 10-fathom patch.

From the centre of the rock, Tathong rock is in line with the extreme of cape Colinson, bearing N. by W. $\frac{3}{4}$ W.; the north-west point of Beaufort island is just shut in behind the rocky islet to the southward of cape D'Aguilar, S.W. southerly; and cape D'Aguilar lighthouse bears S.W. by W. $\frac{2}{3}$ W., distant $8\frac{1}{2}$ cables.

Directions.—Vessels bound to the southward through Tathong channel, and wishing to pass between Bokhara rock and Hongkong island, should, after passing to the eastward of Tathong rock, bring the summit of Beaufort island in line with cape D'Aguilar bearing S.S.W., and steer with that mark on, until Tathong rock is in line with the left extreme of Taitoo island N. $\frac{1}{3}$ W., which mark should be kept on, until abreast of cape D'Aguilar. If passing to the westward of Tathong rock, the latter mark should be brought on as soon as convenient after passing that rock.

Vessels passing to the eastward of Bokhara rock should not open Tathong rock to the northward of Pottinger peak, until the southern extreme of Tytam peninsular is open south of cape D'Aguilar.

The most direct route for steam vessels leaving Hongkong by Lyemun pass and through Tathong channel is to pass west of Tathong and Bokhara rocks, and after passing cape D'Aguilar steer so as to pass midway between Putoy and Sunkong islands, where there is a good channel with 15 to 20 fathoms mud.

Lighthouses.—On cape D'Aguilar a round white tower, 30 feet high, has been erected, the summit of which is 200 feet above the level of the sea; the light has not yet been exhibited. Near the tower is the keeper's dwelling, which is also white.

On green island a round white tower has been erected, 20 feet high, its summit being 108 feet above the level of the sea; the light has not yet been exhibited. The keeper's dwelling is situated near the lighthouse, and is also white.

AUSTRALIA.—PORT PHILLIP.—WEST CHANNEL.

Queenscliff Bight.—Many shoal patches, with from 3 to 6 feet upon

them, have formed in Queenscliff bight since the Admiralty survey made in 1864. The two outer patches, each $1\frac{1}{2}$ cables in extent, are on a line joining Queenscliff high light and Swan-spit lighthouse, and are 4 cables apart; the south-westernmost being $1\frac{1}{2}$ miles from Swan-spit lighthouse.

The coast in Queenscliff bight has extended outwards about 150 yards, and is now partially covered with grass.

Royal George Bank.—This Bank has moved 135 yards south of its former position, and now has 14 feet on it at low water.

Swan-spit has extended to the southward, there being at present a depth of 12 feet at half a cable south-east of the Swan-spit lighthouse. There are 16 feet at $1\frac{1}{2}$ cables E. $\frac{1}{2}$ S. of the lighthouse, and 17 feet at low water at $2\frac{1}{2}$ cables E.S.E. from it.

A shoal is also forming at $1\frac{1}{2}$ cables N. by E. $\frac{1}{2}$ E. from the lighthouse, upon which at present there is a depth of 6 feet.

Buoys.—A small black cask buoy will be placed on the end of Swan-spit until the shoal is removed by dredging.

The most dangerous shoal known to exist in the west channel lies N. E. by E. $1\frac{1}{2}$ cables from Swan-spit lighthouse, with 13 feet upon it at low water, and is marked by a chequered buoy.

The channel, northward of this shoal, carries a depth of not less than 18 feet, and probably 20 feet will be found, at low water.

PORT JACKSON.—NEW SOUTH WALES.

West Channel.—Craigend mill, hitherto used as a mark for this channel, has been removed, but the spire of a new Wesleyan chapel at Woolomoloo (nearly on the site of the mill) kept a little open of Bradley point, bearing S.S.W. $\frac{3}{4}$ W., leads through the West channel and clear of the shoal water off George head.

CHINA SEA.—REPORTED POSITION OF RAGLAN BANK.

The French Government gives notice that the ship *Jacmel* passed very close to a shoal, on which the sea was breaking heavily, situated in latitude $9^{\circ} 24' N.$, longitude $109^{\circ} 26' E.$ This is supposed to be *Raglan* bank, formerly reported in latitude $9^{\circ} 28' N.$, longitude $109^{\circ} 25' E.$, and unsuccessfully searched for by H. M. surveying steamer *Rifleman* in 1863.

SOUTH AMERICA.—COAST OF BRAZIL.

The following information relating to ports on the coast of Brazil, has been derived from the remarks of Captain Stenzel, commanding the

German vessel of war *Albatross*, 1873, and Captain V. D. Goltz, commanding the German vessel of war *Augusta*, 1874 :—

Commandatuba River is a small river, the entrance of which is in latitude $15^{\circ} 28' S$. The bar of this river can only be crossed by the smallest coasting vessels at high water in calm weather. The German colony Monitz is established on its banks.

Ilha Grande.—Sitio Forte bay on the north-west side of Ilha Grande, has good anchorage in 9 to 10 fathoms, blue clay, the bay is well sheltered, and capable of accommodating several vessels.

Supplies.—Fresh water, fruit, and fish can be easily obtained at Sitio Forte bay, but other kinds of provisions must be previously ordered.

Ubatuba Road, about 40 miles south-westward of Ilha Grande, can only be used by small vessels, as the water is shallow ; the road is also exposed to the swell from seaward.

Supplies.—Fresh provisions are scarce, and can only be obtained by order.

Sao Francisco Do Sul.—In the north channel, leading to the anchorage off the town of Sao Francisco do Sul, the following buoys have been laid down :—A black buoy on a shoal $9\frac{1}{2}$ cables N. $\frac{1}{2}$ E. from Cross point ; a red buoy on a shoal between 4 and 5 cables N.E. from Cross point ; and a buoy on a shoal close off the town.

Tajahi River, was entered by the *Albatross* in October, 1873.

The entrance to this river, in latitude $26^{\circ} 55' S$., is between Cabessado point on the south side, and a low neck of land on the north with a spit extending from it in the direction of Cabessado point, rendering the channel narrow and difficult. The spit is marked by a buoy.

The depth of water obtained to the northward of Cabessado point was $2\frac{3}{4}$ fathoms, and inside the spit 2 fathoms, which depth was maintained until near the town of Tajahi, where the depth again increases to $3\frac{1}{4}$ fathoms.

Anchorage.—The best anchorage is abreast of the church, a little above the town, where the breadth between the 3 fathom lines of sounding is about one mile ; the bottom composed of sand and clay.

Tides.—The following observations were made in Tahaji river between the 5th and 8th of October 1873. The stream on the surface was always running out, with a maximum velocity of $1\frac{1}{2}$ knots, but it was checked by the under current during the flood. The time of high water at full moon was 2 hours, rise $2\frac{2}{3}$ feet.

After continuous rain on the mountains in the vicinity of Tahaji, the ebb stream is said to run at the rate of 3 knots, and after strong easterly winds the flood stream is said to last 10 hours.

Supplies.—Fowls, eggs, butter, fruit ; and occasionally fresh meat ; also several kinds of timber can be obtained.

Telegraph.—Tahaji is in telegraphic communication with the town of Nossa Senhora do Destero, on Santa Catharina island.

Atalaia Point.—The lighthouse on this point, the extreme western point of Salinas Falsas bay, and situated 40 miles to the eastward of the entrance to Pará river, is difficult to recognise during the day, as it stands close to a forest, the trees of which are nearly as high as the lighthouse.

Captain V. D. Goltz was informed that the pilot signals at Atalaia point have been discontinued.

Pará River.—The *red* buoy marking the east side of Tijoca bank, at the entrance of Pará river, has been shifted from the east side of Cabeza do Meio to the south end of Cabeza do Sul; two *red* conical buoys have also been placed on the outer edge of a sand bank with 9 feet on it, lying off Penhacova about $2\frac{1}{2}$ miles north of the town of Pará.

SPAIN, WEST COAST.—REMARKS ON THE ANCHORAGES AT CORCUBION AND RIA DE AROSA.

The following remarks on the anchorages at Corcubion, and in the Ria de Arosa, have been received from Rear-Admiral Frederick Beauchamp Paget Seymour, C.B., in command of the Channel Squadron, 1874:—

Corcubion.—The harbour of Corcubion can accommodate as many as six heavy ironclads lying in from 13 to $7\frac{1}{2}$ fathoms water, single anchor, with from 72 to 84 fathoms of cable out. The bottom is good holding ground, and the swell that sets in, in heavy southerly gales, is so completely broken by the Lobeira Grande and Corromeiro Viejo rocks, which act as natural breakwaters, as to be hardly felt at the anchorage.

The best leading mark in is a very conspicuous waterfall pouring down a mountain gorge, which will be seen bearing E. $\frac{1}{4}$ N. on getting abreast of Cape Finisterre. It falls over the spur lying between Mount Ezaro and Mount Pindo, and bringing it on with the northernmost of two white houses on the beach in Ezaro bay, will take you between the Corromeiro Chico and the Lobeira Grande. When Cape Cè bears North, haul in for the anchorage, which will now be visible. Give the Corromeiro Chico a berth of two cables' length, and proceed up the harbour, anchoring as high up as convenient.

There is no beacon now on the Corromeiro Chico, and, as a rule, none need be looked for on the positions assigned them on the Spanish charts.

In fine weather there is only an occasional curl of a wave over Corromeiro Chico at high tide.

Lobeira Grande is a pile of reddish coloured boulders and rocks. In the centre of it there stands a low stone building used for drying and packing of fish.

Fresh beef can be obtained at Corcubion, but it is dear, the price in 1874 having been 8½d. per pound, which includes the lately imposed export tax.

RIA DE AROSA. (AROSA BAY.)

The towns of Villa Garcia and Carril being now connected with the capital of the province, the historic town of Santiago de Compostella, by a recently constructed railway, the bay of Arosa is becoming of some importance, and is visited twice a month by the large English steamers of the Pacific and River Plate lines.

Standing in from the westward or north-westward in fine weather, Salvora island, at its northern entrance, will be soon recognised. It is of moderate height and rocky; the lighthouse on it is not easily discernible from seaward, being very low, and of the same colour as the rock on which it is built.

In going in during the fishing season, April until December, care must be taken to avoid the nets which are constantly being laid down and taken up by the innumerable fishing-boats belonging to the district. The regulations of the port which compel them to leave a clear space in the fairway leading up to Rua island being generally disregarded by them.

Up to Rua there are no dangers which are not easily seen; but between it and the anchorage off Carril there are there sunken patches which are correctly marked on the Spanish chart of Ria de Arosa, the beacons on which have long since been washed away or stolen. Their position is as follows:—

Bajo Ter, a sunken rock with two fathoms on it at low water, about a third of a mile off the north-eastward point of Arosa, which will be passed half a mile to the north-westward by (after passing Rua) steering for the Vigia Ancados, on a N.E. by E. ¼ E. bearing.

La Barsa, a conical rock, which uncovers about three feet at low water, and has deep water close to. It lies about half a mile south of Chazo point.

The rocky patch consisting of Las Novias, Bajo Seijo, and Las Hermanas, which lie one mile W.N.W. from Sines point; Las Novias shows about four feet at high water, but the other two rocks are covered at high water and show about four feet at low water. There is seven to eight fathoms, one and half cables to the north-east and east of them.

Mount Giabre kept E. ¼ S., and steered for on that bearing, will lead between Bajo Seijo and La Barsa, or should mount Giabre be hid by clouds, the island of Burencia, kept well to the northward of the first rise in the mountain range to the N.W. (behind Puebla), will also lead clear of them.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
111	WHITE SEA—Moudiuga Island.	Establishment of Leading Lights.
112	BRITISH COLUMBIA—Georgia Strait—Burrard Inlet—Atkinson Point.	Establishment of a Light.
113	PORTUGAL—Tagus River.	Prohibition from Anchoring near Telegraph Cables.
114	JAMAICA—Kingston Harbour.	Buoys and Beacons in Channel.
115	FINLAND GULF—Sestrotetzk Harbour.	Establishment of Harbour Lights.
116	ENGLAND—East Coast—Galloper Sand.	Establishment of a Buoy on North End.
117	ENGLAND—East Coast—South Sand Head Light-vessel.	Alteration in Fog-Signal.
118	AFRICA—West Coast—Cape Three Points.	Establishment of a Light.
119	RED SEA—El Weg (Sherm Wej-h).	Establishment of a Light.
120	NORWAY—Christiania Fiord—Torgauten Light.	Alteration in the Light.
121	SOUTH AUSTRALIA—Port Adelaide Light.	Alteration in the Light.

NAUTICAL NOTICES.

111.—WHITE SEA.—*Dwina River Mouth.*—*Moudiuga Island.*—Two lights have been established on the south end of Mudovski or Moudiuga island, at the north entrance of the Dwina river, replacing the two beacons heretofore used as a leading mark for crossing the Berëzov bar.

Southern Light is a *fixed white* light of the fourth order, visible between the bearings of N. by W. $\frac{1}{3}$ W. round by E. to S.E. $\frac{1}{3}$ S.; it is 66 feet above the sea, and should be seen 9 miles. The tower is situated on the south part of the island; it is 57 feet high, square, built of wood, and painted black. Position, lat. $64^{\circ} 51' N.$, long. $40^{\circ} 19' 40'' E.$

Northern Light lies N.W., 470 yards from the southern light; it is a *fixed red* light of the sixth order, visible between the bearings of S.E. $\frac{2}{3}$ E. and S.E. $\frac{1}{3}$ S., elevated 20 feet above the sea, and should be seen 5 miles. The tower, 18 feet high, is built of wood, and painted white. The light is exhibited from a window facing the bar.

Directions.—In entering, when crossing the Berëzov bar, keep the above lights in line, bearing S.E., and when, by the bearing of the light on the west side of Moudiuga island, the bar has been passed, the vessel may anchor.

112.—BRITISH COLUMBIA.—*Burrard Inlet.*—*Atkinson Point.*—A light

exhibited from a lighthouse on Atkinson point, the north point of entrance to Burrard inlet, Strait of Georgia. The light is a *revolving* white light, attaining its greatest brilliancy *every minute*, elevated 119 feet above high water, and should be seen 14 miles. The tower, 58 feet high, is a square wooden building, attached to the keeper's dwelling. Position, lat. 49° 19' 40" N., long. 123° 16' W.

Note.—Vessels navigating in the Strait of Georgia should not bring the light to bear to the westward of North, in order to clear the Sturgeon bank off Frazer river.

113.—PORTUGAL.—*Tagus River.*—The Portuguese Government has given notice that, to prevent injury to a submarine telegraph cable crossing the River Tagus, vessels are prohibited from anchoring within the space enclosed by lines drawn between Ponte d' Argés and Trafaria on the West, and the Lazaretto and the telegraph station at Bom Sucesso on the East. Also, that should a vessel, from any cause, anchor within this prohibited space, the anchor is not to be lifted without an express order from the Captain of the Port.

114.—JAMAICA.—*Kingston Harbour.*—The following information, relative to the piles and buoys marking the channels leading to Kingston harbour, has been received:—

The piles on the north and south sides of the narrows are placed in 3 fathoms water, and the buoys in 5 fathoms. Those objects on the *north* side are painted *red and white vertical stripes*, and those on the *south* side *red*.

SOUTH SIDE, *red*.

Currie's Gate pile, on the western edge of the shoal extending from Gallows point, is 20 feet above water and surmounted by a *barrel*; it bears S. $\frac{1}{4}$ W., distant 9 cables from Fort Augusta light.

Two Sisters pile, is placed S. by E. $\frac{1}{2}$ E., 3·6 cables from Fort Augusta light; it is 20 feet high and surmounted by a *triangle*, base downwards.

Sphinx pile, is S.E. $\frac{1}{4}$ E., 3·1 cables from Fort Augusta light.

Mammel pile, is E. by S. $\frac{1}{4}$ S., 3 $\frac{1}{4}$ cables from Fort Augusta light.

West Horse-Shoe pile, is E. $\frac{1}{2}$ S., 6·8 cables from Fort Augusta light.

The last three piles are surmounted by *right angle triangles*, with the base upwards.

East Horse-Shoe pile is E. $\frac{1}{4}$ S., 8·2 cables from Fort Augusta light; it is surmounted by a *globe*, and is 20 feet above water.

NORTH SIDE, *red and white vertical stripes*.

Burial Ground pile, opposite Two Sisters pile, is S. by W., 3·2 cables from Fort Augusta light; it is surmounted by a *triangle*, base upwards.

St. Alban's pile, is East, 2·9 cables from Fort Augusta light; it is surmounted by a square.

Greenwich House pile, is S.W., 4 cables from Greenwich House, and is surmounted by a cross.

The fourth and last pile on the north side is about three-quarters of a mile west of the town of Kingston, in 14 feet of water, and surmounted by a St. Andrew's cross.

For the safety of vessels of heavy draught, two buoys have been moored on the south side in 5 fathoms water, viz. :—

Narrows buoy, off, and between, the Sphinx and Mammel piles, bears from Fort Augusta light E.S.E., distant 2·9 cables.

Middle Ground buoy, bears from Fort Augusta light, E. $\frac{1}{2}$ S., distant $1\frac{1}{2}$ miles.

And on the north side of the channel one buoy in 5 fathoms, viz. :—

Hunt Bay buoy, east of St. Alban's pile, bears from Fort Augusta light E. $\frac{1}{4}$ N., distant 4 cables.

Note.—The buoy, of which notice was given in Nautical Notice, No. 97 (April, 1875), that it would be placed near Drunkenman's cay, entrance of Port Royal, has been placed in position. It is painted red and lies in 6 fathoms, N.W. by N., distant a quarter of a mile from the bay.

115.—GULF OF FINLAND.—*Kronstadt North Channel.*—*Sestroretzk.*—On the opening of navigation, the following lights will be exhibited at the harbour which has been constructed near Sestroretzk, about $1\frac{1}{2}$ miles N.N.E. $\frac{1}{2}$ E. from Cape Dubowsk, and in lat. $60^{\circ} 7' N.$, long. $29^{\circ} 56' 30'' E.$

1. A *fixed* white light at each angle of the outer or western side of the harbour.
 2. A *fixed* red light on the eastern side of the entrance to the harbour.
 3. A *fixed* blue light on the western side of the entrance to the harbour.
- The above-named lights will be exhibited from lanterns.
4. A *fixed* white light, visible 6 miles, on the wharf at which vessels will be secured.

116.—ENGLAND.—*East Coast.*—*Gallopier Sand.*—In the month of June, 1875, a large buoy, painted in black and white horizontal bands, and surmounted by a staff and diamond, will be placed to mark the north end of the Gallopier staff, and further notice will be given when the buoy is placed.

117.—ENGLAND.—*East Coast.*—*South Sand Head Light-Vessel.*—In the month of June, a trumpet will supersede the gong as a fog-signal. In thick or foggy weather the trumpet will sound a blast of five seconds' duration every two minutes.

118.—AFRICA.—*West Coast.—Cape Three Points.*—It is the intention of the Colonial Government of the Gold Coast to erect a lighthouse upon Cape Three Points, from which it is expected a fixed light of the third order will be exhibited about the 1st July, 1875.

119.—RED SEA.—*El Weg (Sherm Wej-h).*—From the 1st July, 1875, a light will be exhibited from a lighthouse on the east side of the entrance of the harbour of El Weg (Sherm Wej-h). The light will be a *fixed* white light elevated 106 feet above the level of the sea, and in clear weather should be seen a distance of 14 miles. Position, lat. 26° 13' N., long. 36° 27' E.

120.—NORWAY.—*Christiania Fiord.—Torgauten Light.*—The northern limit of the white light has been extended to the bearing of S.E.

121.—SOUTH AUSTRALIA.—*Port Adelaide Light.*—With reference to Nautical Notice, No. 236 (December, 1873), on an alteration to be made in the lights at Port Adelaide, information has been received that the light on the south side of the outer bar has been changed to a *white revolving* light of the first order, showing a bright flash every half minute: it should be seen 17 miles.

CHARTS, &c., Published by the Hydrographic Office, Admiralty, to the end of April, 1875, and Sold by the Agent, J. D. Potter, 81, Poultry, and 11, King Street, Tower Hill.

No.	Scale.	a. d.
780	m = { 0.66 }	Pacific Ocean :—The Phillippine and Celebes Islands, New Guinea and Australia to San Francisco and Easter Island, in 4 Sheets each 2 6
781		
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783		

HYDROGRAPHIC NOTICES.—The results of marine surveys made in various parts of the world by British naval officers are published by the Admiralty in the form of hydrographic notices. These notices are kindly sent to us, but want of space too frequently prevents our re-publishing them. They are of great service to mariners navigating in the various localities referred to in the notices, and as the surveys are carried out at the country's expense, and the results published in a printed form by a public Department, we presume the notices may be obtained by British shipmasters on application at the Admiralty. In future, we hope to be able to give a list of such notices issued each month.

OUR OFFICIAL LOG.

MARITIME LAW.

[We think it well to record the two following cases in our pages, as they are of considerable importance as affecting the liability of ship-owners.—ED.]

LOSS OF CARGO THROUGH UNSEAWORTHINESS.—THE “THORWALDSEN.”—In an action to recover the sum of £421 for advances for disbursements, and £1,548 being the value of the cargo of timber shipped on board the defendant's vessel, the *Thorwaldsen*, which was alleged to have been lost by the negligence of the master and the unseaworthiness of the vessel, it appeared from the evidence that the *Thorwaldsen*, a vessel of 800 tons burthen, which had sustained serious injury on previous voyages, was chartered to carry timber, and the charter contained a provision that the merchant was to supply a deck load if the master required it. The *Thorwaldsen* left Sapelo on the 20th December, 1873, filled with pitch pine under hatches, and carried two layers of logs, about fifty feet by fifteen inches square on deck, which covered it entirely with the exception of the hatches, and were placed there by the orders of one of the owners. The vessel grounded heavily on the bar on leaving Sapelo, but the owner having signalled her to go-ahead, her master went on without returning to Sapelo, or going to Savannah, twenty-five miles distant, for examination. The master's and mate's entries in the log indicated that she struck once heavily and made a great deal of water. After leaving Sapelo, she made two feet of water in fine weather, and it was shortly discovered that her decks were giving way. It blew hard on the 25th and 26th of December, and, although the pumps were kept constantly going, she soon had seven or eight feet of water in the hold. The state of the weather prevented the deck cargo from being cast overboard, and on the 30th December, after a consultation, the vessel was abandoned, and all hands were saved by a passing vessel.—The loss of the *Thorwaldsen* had, in February, 1874, formed the subject of a Board of Trade inquiry, when the Court found that the owner was to blame.—Lord Coleridge, in summing up the evidence, said that the two questions for the consideration of the Jury were, first, whether the ship was seaworthy at the time she left her moorings at Sapelo, and, secondly, whether she was seaworthy after she struck on the bar. A shipowner undertook in every charter that the ship should be reasonably adapted for the employment it was to perform. The first question was whether she was seaworthy to carry her cargo; but it was also the duty of the master, if the ship became unseaworthy afterwards, to repair her if

possible, or, at all events, not to proceed with her in an unseaworthy state; and this raised the second question—Had the shipowner performed those duties? First, was she seaworthy when she started? Two questions were made on this:—First, that she was a bad ship, not fit for that or any other purpose; and, secondly, that independently of that, at any rate she was not fit to carry such a deck-load and cargo of pitch pine. It was true the charter said the merchants were to supply a deck-load if the master required it, but that did not in any way bind the master to take one. After commenting upon the early history of the ship, which was built in Canada, the character of her cargo of pitch pine, which was below the specific gravity of water, and the Canadian law prohibiting deck-loads in winter, his lordship continued that there was a good deal of ambiguous evidence as to how the deck-load had come to be put on, whether or not the master had been overruled by the owner; and it would be for the jury to judge of it. If they came to the conclusion that the master was disinclined to take a deck-load, it would be strong evidence that a competent man then thought it dangerous. Having regard to the time of year, the load under the hatches, and the character of the ship, was not the deck-load strong evidence that she was unseaworthy when she started? Those were the cardinal points on the first question. Then, secondly, did she become unseaworthy by striking on the bar, and was the conduct of the master negligent in consequence? The real question was very simple—Did the *Thorwaldsen* strike heavily going across the bar, and strain herself and become unseaworthy, so that she was unfit to proceed? As to this there were contemporaneous statements; it seemed admitted that the harbour at Sapelo was only just deep enough at spring tides to let such a ship loaded cross the bar. The mate's entry in the log was, "Crossed the bar at 9 a.m., the ship striking once very heavily; sounded the pumps, and found the ship making a great deal of water." The master's entry was very similar. The mate in his examination in the cause stood by this statement in the log. All the documents, except one letter, were one way, and backed up the substantial accuracy of the mate's entry, which had been suggested to be false. It was a fair remark that the defendant did not seem to have insured his share of the ship except to the extent of £250. If the jury thought the ship unseaworthy when she started from Sapelo, no other question arose; if the jury thought the ship became unseaworthy afterwards on crossing the bar, they were also to consider if it was an unreasonable thing to proceed. They must judge for themselves whether she could not have been turned in a fresh water channel of 600 yards and repaired at Sapelo. The damage in either event would be the invoice price and the amount of the advances; but the defendants might have leave to move to reduce the verdict by the latter sum.—

The jury returned into court, after an absence of little more than half-an-hour, with a verdict for the plaintiff for £1,548, and £420 for advances—finding that the ship was not seaworthy when she started.—Court of Common Pleas.—Sittings at *Nisi Prius*, before Lord Chief Justice Coleridge and a Special Jury, February 20.

LOSS OF CARGO THROUGH IMPROPER STOWAGE.—THE “*WALAMO*.”*—In an action brought by the plaintiff, as the representative of the Russian Government, against the defendants, who were the owners of the *Walamo* (s.), to recover the value of six armour-plates and six cases of bolts consigned to the Russian Government, it appeared that the cargo in question was stowed under the superintendence of defendants’ stevedore, shipped on board the *Walamo* at Hull, to be carried to Cronstadt, and that when she was about seventy miles on her voyage the plates, which were, it was alleged, improperly stowed, broke loose, knocked a hole in her sides, and she went down, her crew being rescued by a smack. A Board of Trade inquiry, on the loss of the *Walamo*, was held at Hull, in October, 1878, when the Court found that the vessel was unseaworthy, and her cargo insufficiently secured. The case set up by the plaintiff was that the plates were improperly and insecurely stowed in the hold, and that this allowed them to break loose and cause the accident. The defendant’s contention was that the stowage was conducted in the best and safest manner, and that armour-plates were dangerous things to carry, and that the loss was caused by the strong wind and heavy cross-sea, which made the ship roll tremendously and shift the plates. Witnesses having been called to prove the mode of stowing and securing the armour-plates, the circumstances of the loss, and the state of the weather when she foundered, the different ways in which the armour-plates might or should have been stowed, and the attention of the Court having been directed to the clause in the Bill of Lading, which excepted “all accidents, loss, or damage of whatsoever nature or kind, and however occasioned, from machine boilers, steam and steam navigation, or from perils of the seas or rivers, or from any act, neglect, or default whatsoever of the pilot, master, or mariners in navigating the ship, the owners of the vessel being in no way liable for any of the consequences of the causes above excepted, and it being agreed that the captain, officers, and crew of the vessel in transmission of the goods, between the shipper, owner, or consignee thereof, and ship or shipowners, be considered the servants of such shipper, owner, or consignee,” Mr. Justice Blackburn summed up the case to the jury, and said: I shall not call your attention to all the details of the evidence, as that has been already done very thoroughly and ably by the counsel on both sides, and you have paid very close

* A new trial has been applied for and granted in this case.

attention to it. It will be necessary, however, to mention some of the facts; but, before doing that, I will tell you the law on the subject. Every shipowner has the duty cast upon him to make his ship reasonably fit to encounter the perils which may reasonably be expected on the voyage for which the vessel is intended. The ship cannot be made absolutely perfect, but what is required to be done is that she shall be reasonably seaworthy and fit to encounter those perils. Here it is conceded that both ship and crew were good, and the whole question is whether she was stowed so as to render her seaworthy in the manner I have described. If that has been done, that is all that a shipper has a right to expect. Now, in order to determine whether that has been done, you must take all the circumstances into your consideration; and if all reasonable care had been taken, and a sufficient number of competent persons and proper material were provided, and time enough allowed for the stowing of the ship, that would be strong evidence to show that she was properly stowed; but if, on the other hand, too few persons were allowed, and there was a scarcity of material, and things were hurried, that would be evidence to the contrary, which you would consider in coming to a conclusion. The learned Judge then described the manner in which the plates were stowed, and remarked, in passing, on the different points which arose; and then told the jury that they would have to consider whether the proper precautions were taken to render the plates reasonably secure, so that the ship should be fit to encounter the perils which a prudent man might expect at that season. He said: The first question I shall leave to you is as to whether the ship was reasonably fit to carry the cargo in the weather that might be expected. The evidence shows that at that season the weather is likely to be worse as the year gets on, for the rates of insurance are raised in August and September, in which latter month the ship sailed. Mr. Wilson was to procure insurance, so that he must have known of the raising of the rates, and, consequently, of the increase of the risk. Now, as rolling was partly the cause of the loss, we must consider what was the cause of the rolling. Some ships require, from their build, to have their weights stowed higher than others, in order to put them in proper trim. This is said to be the case with the *Walamo*, and it is an element to be taken into consideration in estimating whether she was seaworthy—that is, you must consider whether her weights were properly distributed and placed in her. It is necessary, in order to render the defendants liable, that the loss should be caused by the unseaworthiness, for the Bill of Lading says that the shipowner will deliver the goods if certain perils mentioned in it do not intervene and prevent him; so that if those perils only caused the loss, the shipowner would not be liable. The second question, therefore, will be—was the loss caused by the unfit-

ness of the ship, by reason of bad stowage, to undertake the voyage? If you think that the plates were improperly stowed, you may come to the conclusion that this was the cause of the loss. It is not necessarily so, but it may be; therefore, you must consider how the plates were stowed. His lordship then adverted to the material portions of the evidence on that point, and afterwards went through parts of that which related to the state of the weather. He called the attention of the jury to the principal witnesses who gave evidence upon this point, and said: If you think that the sea was not more rough than it might reasonably be expected to be, you may assume that the ship was not stowed in the way she ought to have been to go upon that voyage. If, on the contrary, you think that the sea was rougher than might have been expected, then you may come to the conclusion that she was properly stowed, and that it was the unusually rough sea which caused the loss, in which case the defendants would not be liable, as such a loss would be a peril excepted by the Bill of Lading. His lordship then left the following questions to the jury:—1. Was the vessel at the time of her sailing in a state, as regards the stowage and securing of the armour-plates, reasonably fit to encounter the ordinary perils that might be expected on a voyage at that season from Hull to Cronstadt? 2. If she was not in a fit state, was the loss that ensued caused by that unfitness?—He added: The jury are to understand in answering the second question that, though the disaster would not have happened had there not been considerable sea, yet it is to be considered as caused by the unfitness if the jury think that the plates would not have got adrift when they did had the stowage been such as to put the ship in a fit state.—The jury, after retiring for about an hour, returned into Court, and found, in answer to the two questions left, that the ship was not in a fit state to encounter the perils, and that the unfitness was the cause of the loss.—This was a verdict for the plaintiff. The amount claimed was something over £6,000.—Court of Queen's Bench. Sittings at *Nisi Prius* at Guildhall, before Mr. Justice Blackburn and a Special Jury, Feb. 22.

SHIPPING AND MERCANTILE GAZETTE CORRESPONDENCE.

(Reprinted by special arrangement with Sir WILLIAM MITCHELL.)

SEAMEN DISCHARGED ABROAD.—If a crew is shipped in a port in the United Kingdom, to go to a port in the United States of America, and back to a final port of discharge in the United Kingdom or Continent, between Havre and Hamburg, both included, on her return to a French port can the Consul legally require the master to deposit the passage-money of the crew to England, when the crew are paid off with more

than sufficient to carry them to any English port? As each man is paid off he is told that he can have a free passage to England by applying at the Consulate.—[Whenever the service of any seaman belonging to a British ship terminates at any place out of Her Majesty's dominions, the master is to give to each such seaman a certificate of discharge, and besides paying the wages to which they may be entitled, provide them with adequate employment on board some other homeward-bound British ship, or furnish the means of sending them back, or provide them with a passage home, or lodge with the Consul a sum of money deemed to be sufficient to defray their subsistence or passage home. Our correspondent should have complied with the latter part of Section 205 of the Act of 1854, here quoted, and deposited the money.]

SHIPOWNER'S LIABILITY.—In the event of loss or damage to cargo in a foreign port by negligence of the master or crew, can a shipowner be held liable to a greater extent than the value of his ship and her freight? Can another vessel, managed by the same firm, but not belonging exactly to the same owners, be arrested to satisfy any claim not covered by the sale of the wrong-doing vessel?—[Under section 54 of the Merchant Shipping Act, 1862, any damage or loss to any goods, merchandise, or other things, without the actual fault or privity of the shipowner, his liability is limited to £8 per register ton. This is the British law, but would not govern the tribunals of a foreign State. A vessel managed by the same firm, but not belonging to them, could not be arrested to satisfy any claim beyond the value of the shares, or interest in the vessel, owned by them.]

SHIP'S ARTICLES.—The crew of my ship signed articles from London to the West Coast of America and back to the United Kingdom or the Continent, not to exceed two years. They wished to leave the ship at Dunkirk as a port of destination. Am I compelled to pay the passage of my crew to England. They are mixed foreign, and British subjects?—[As no distinction is drawn in the Merchant Shipping Act between British and foreign subjects serving on board British ships, all the crew could demand their discharge at Dunkirk and a passage to London.]

BILLETS AND BARK.—I chartered a vessel belonging to me at Königsberg, for Peterhead, to load a cargo of billets (timber). My charter-party signifies that I am to be paid freight at so much per cubic foot, British measurement. On arrival at Peterhead, the merchant turns round and manufactures the timber by taking off the bark, and is only to pay me my freight at same rate per cubic foot for the timber so stripped, making me carry the bark free. Am I entitled to carry the billets with bark on it, and only to be paid my freight according to the manufactured measurement?—[Freight would be due on the cargo as shipped. No usage of merchants would legally entitle a consignee to dress timber and then

pay freight only on the diminished quantity. In such a case the ship would not have a full and complete cargo, and would be entitled to dead freight.]

GENERAL.

GAS *versus* OIL FOR LIGHTHOUSES.—In our last number we referred to a recent Parliamentary paper on this subject, and, unintentionally, threw some rather cold water upon the gas light. Messrs. Edmundson & Co., however, who have given considerable attention to the application of gas for lighthouses, with very satisfactory results, think we did not state the case quite fairly, and accordingly have written to us on the subject. Messrs. Edmundson maintain that, in comparison with oil, gas is cheaper, less troublesome, and gives a more powerful light, besides being able to be turned high or low, according as a strong or an ordinary light may be required. In reply to Messrs. Edmundson we beg to say that as regards the cheapness and little trouble of gas when once established, we believe with them it would be more economical and more easily managed than oil, and we are not aware that in our notice we said anything to the contrary. As regards the simple question of the relative power of the two lights, we admit that our remarks, if applied to this question only, did not quite do the gas justice, according to the reports printed in the Parliamentary paper; but we did not intend to make a direct comparison between the two light-producers. The whole point of our paragraph was, that it did not appear to be worth while disturbing present arrangements to substitute gas for oil at our lighthouses, because all the present expensive and efficient plant for oil burning would be disestablished and wasted, and the additional advantage offered by the gas light would not compensate for the loss thus sustained. We have no prejudice against gas, and would be glad to see it introduced wherever economical and other considerations might make it practicable and advisable. In the establishment of new lighthouses at home or abroad, we hope to see gas adopted, and if it proves itself, as respects economy and effective power, superior to oil, then it will, in the course of time, supersede oil. But we still continue to think, for the reasons above stated, that it will not be considered worth while at present to make a wholesale change from oil to gas, even though the gas does appear to possess some advantages over oil.

THE "BESSEMER" STEAMSHIP.—This novel vessel made a private and official trial trip across to Calais, from Gravesend, on the 10th of last month. The result is that the Board of Trade have granted her a certificate, the officers of that Department being satisfied as to her seaworthiness, and her capacity for carrying passengers. It appears that the passage was a very fair one, and that she averaged something over eleven knots an hour. With her head to the sea she went along beautifully, but with the sea on her beam she rolled a little. The swinging-saloon was not quite in a fit state for trial, and although during the voyage it was let go, yet it was chiefly for the purpose of tilting it to one side to enable some workmen to go underneath. Its capabilities did not, therefore, have any sufficient test. The saloon is an imposing and elegantly decorated chamber, and, after the smell of paint has gone off, will be a delightful place, even if fixed. Nothing approaching it for roominess, loftiness, airiness, and general comfort, has yet appeared in any of our passenger ships. In the very difficult entrance to Calais harbour the vessel came against the pier, but did very little damage. It is very much to be hoped that she will prove successful, if only to reward the enterprise and perseverance of Mr. Bessemer and Mr. E. J. Reed, M.P.

THE CHEQUE BANK.—Masters and officers, apprentices and seamen, are often at a loss to know how to make payments abroad, or in ports in the United Kingdom; we, therefore, recommend them to give consideration to the system of the Cheque Bank. The cheques issued by this bank are as good as bank notes, because no cheque can be obtained from the Cheque Bank until the full amount stamped on its face has been paid in. Moreover, the amount for which a cheque is filled up, cannot be withdrawn until the cheque is presented for payment, however long the cheque may remain in circulation. Every bank cheque bears stamped on its face the maximum amount for which it may be drawn, but it may be drawn for any *less* sum. These cheques are becoming very generally accepted everywhere; they are safer to carry about than notes and gold, because they are of no use to anyone but to the person to whom they are made payable. For the various payments which masters and mates have to make, we should think they would be exceedingly convenient.

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COMPULSORY CLASSIFICATION OF MERCHANT SHIPS.

IN the Bill to amend the Merchant Shipping Acts, which has been introduced during the present session by the member for Derby, the latest development of that gentleman's well-known views on the question of the survey of merchant ships are embodied in the following proposal:—

“Except as hereinafter mentioned, no British ship shall proceed on any voyage from a British port unless the committee of management of Lloyd's Register of British and Foreign Shipping, or the Liverpool Underwriters' Registry for Iron Vessels, or some other corporation or association approved for the time being for this purpose by the Board of Trade, has first classed and given a certificate of the classification of such ship to the owner or owners thereof, provided that the Board of Trade, if at any time the survey or requirements of the said committee or association appear to them to be insufficient, may, after giving six months' notice to the owner or owners of such ship, declare the surveys or requirements of such committee, registry, corporation, or association to be insufficient, and thereupon the same and every certificate of classification founded thereon shall cease to have any effect for the purposes of this Act.”

This is modified by provisoes that such certificate of qualification shall not “for any purpose be construed as amounting to, or dispensing with, proof of the seaworthiness” of the ship in question; that the Board of Trade may specially exempt ships constructed upon any new or untried principle; and that nothing in the Act “shall affect any power of the

Board of Trade to survey or detain any ship under the provisions of any other Act."

On comparing these proposals with former Bills brought into Parliament in previous sessions by the same honourable gentleman, we notice that there are two points of difference, both concerning the position and duties of the Board of Trade. The Board was to have been entrusted with the survey of unclassified ships; it is now proposed merely to invest them with a partial and limited control of the various registries, but they are to be at liberty to deal with any ship suspected of unseaworthiness after their present manner. We think the latter provision of the Bill has scarcely been noticed, nor do we believe it is seriously meant to be a workable part of the Act. It has been said lately that many shipowners who have hitherto objected to compulsory classification are now wishing to have it, and we can believe that many would prefer it to the present harassing interference of the Board of Trade with unseaworthy ships. We do not believe, however, that any shipowners, or, indeed, that any one else, contemplates the working, side by side, of the present Acts, and of a system of compulsory classification. In the interest of the sailor we have advocated the present system, and shall continue to support it; but we conceive that the shipowner would be most unfairly dealt with if the law were in the first place to require him to submit his vessel to regular surveys by societies authorised by law to grant certificates, and then refuse to recognise those certificates as guarantees of seaworthiness. The two things cannot exist side by side: we must choose between submitting the whole Mercantile Marine to such a strict and rigorous system of survey as will enable Government to grant a real certificate of seaworthiness, or else hold the shipowner responsible for the condition of his ship, enforcing that responsibility by keeping a sharp look-out for unseaworthy ships, and when one is found, insisting upon her being at once made seaworthy.

Let us consider what effect a system of compulsory classification would have upon our Mercantile Marine, and to do so it is desirable that we first apprehend the true position and objects of the present registries of shipping.

The object of Lloyd's Register of British and Foreign Shipping, as stated in the first rule of the registry, is to obtain a faithful and accurate classification of the mercantile shipping of the United Kingdom, and of foreign vessels trading thereto, for the use of merchants, shipowners, and underwriters. Several other societies exist with similar objects—one, the Liverpool Underwriters' Registry, only dealing with iron ships; others, such as the Bureau Veritas, and the American Lloyd's, being concerned both with wood and iron vessels. The distinct use and purpose of all these societies is to furnish reliable information to the classes of persons interested, for which information they are paid according to its

market value. The ships submitted to their inspection are classified by them according to laws which are altered from time to time, so that if a vessel have a certain class, in order to form a true judgment of her, it is necessary to consult the edition of the rules in force when she was built, and from that it will be seen how she was constructed. Knowing the objects of these societies, one would not expect that the alterations in the rules from time to time were signs of the development and improvement of shipbuilding; it would rather be supposed that they indicated fluctuations in the market value of the information contained in them. When, in consequence of there having been a long run of heavy losses at sea, underwriters wished for better guarantees of the efficiency of ships insured by them, it might be expected that the rules would be made more stringent; but when, on the other hand, shipowners complained of small profits, and underwriters were having a good time, there would be an inducement to relax restrictions, and each society would, in the natural order of things, strive to outbid its competitors for favours in one direction or the other, according to the special circumstances of the case. We know little of the management of foreign registries of shipping; but it has fortunately been the case that the personal feeling of the managers of the English registries has always been in favour of good and creditable work, and it thus happens that they have been of greater service to the shipping interests of this country than if they had acted entirely on commercial principles. However, they owe their existence to commercial considerations, and their main object must be, and is, to do that which they are paid for doing, and to do it in the way which will most tend to the perpetuation and extension of their business. From what has been so often said about the registries during the last few years, one would suppose that their directors and managers were a body of amiable philanthropists, inspired with a supreme interest in the well-being of the sailor, and having for their chief object the safety of human life on the sea. Whether such is the case, let our readers judge from the account given of the constitution and object of Lloyd's by its secretary, to the Royal Commission:—

Question 8,196: "The Committee is formed of the leading shipowners, underwriters, and merchants of the City of London. Gentlemen are sent to the Committee of the General Shipowners' Society on account of their fitness, and we get the best of those men to serve on our Committee. Then, again, the Committee of Underwriters are chosen from the general body of underwriters, and they send members to our Committee; so that we get the best underwriters, and the best shipowners and merchants to preside over the shipping of the country, and look after the interests involved; it is a well-chosen self-government, the best possible arrangement that can be."

And, again, question 8,198: "There is but one interest there. The shipowners and underwriters are both interested in having good ships. A good shipowner knows that it is not to his advantage to have trashy ships. When he begins in a small way he may not care about having first-class ships, but as his means increase, so he increases the efficiency of his ships."

Can we grant all this? We observe that in all this admirable scheme of enlightened self-interest, the parties about whom the public is most concerned are left out. The sailor has no representative, nor does it appear practicable that he should have, on the committee of any registry whatever. The question then is—Are the interests of shipowner, underwriter, and sailor so bound up with each other that if the first two are properly looked after the third is practically secure?

We do not think that the shipowner's interest is necessarily the same as the sailor's on this point. We do believe that on the whole good and well-found ships pay the best, but there are some trades in which bad ships earn as much as good ones, and that a large number of shipowners do employ, and will, while they can, employ bad ships, is proved by the necessity for legislation at all. Still, let us look the question fairly in the face: Is it so far the general interest of shipowners to have good ships that a committee chosen by them, and which, it is presumed, would be the pick of them, could be entrusted with the management of the interest of the sailor? We think not. One class of shipowners certainly find it much for their interest to have first-rate ships, and to do everything possible to secure their seaworthiness. We refer to those owners who are wealthy enough to be their own insurers, and, unfortunately for the advocates of compulsory classification, their system would, in this respect, interfere with those very shipowners whose interest leads them to do all they can for the safety of their ships. A strong objection to the proposal is that it would subject to vexatious and harassing annoyance just that class of men whose reputation is so high that they need not class their ships in any registry, while underwriters will insure cargo carried by them at lower premiums than would be required in the highest class ships in the best registries. Self-interest leads other shipowners, in many cases, to obtain the cheapest vessels which can be obtained, consistent with a high class at Lloyd's. A high class at Lloyd's represents good chances of profitable employment, and low premiums to underwriters. If the extra money necessary to make the ship not merely a high classed but a thoroughly good ship were spent, there would not be so much wanted for repairs, but that is a distant and uncertain advantage, and so it comes about that certain present saving is thought more of than an uncertain future gain.

Is it clearly the interest of the underwriter that all ships should be

seaworthy? Most underwriters protest that it is, but of this, too, we are rather doubtful. We conceive the use of the registries to underwriters is expressed in the word *classification*. It does not really matter to them what is the average character of ships, whether, for instance, iron ships have a margin of strength of 80 or 180 per cent., all that is necessary is that they shall be able to find out in the case of each individual ship whether she is, or is not, up to a certain standard. The premium for ships of the standard is regulated by the percentage of losses, and we cannot see how underwriters, as a body, can be affected by it; although a series of heavy losses may ruin some underwriters, the rise of premiums for insurance will make the fortunes of as many more.

The ultimate loss of property, caused by shipwrecks, must fall upon the community at large, upon the consumers of the articles imported, and upon the producers of the articles exported; the first have to pay higher prices to enable merchants to pay the increased freights consequent upon the heavier premiums for insurance, the second are by higher freights placed at a disadvantage as regards the foreign manufacturer. Certainly we cannot see that the great body, either of shipowners or underwriters, have so clear and undoubted an interest in the seaworthiness of ships, that, in placing our Mercantile Marine under their control, we should be taking the best security for the preservation of the lives of our sailors. If the sailor cannot look after his own interest, and it certainly appears that, at present, he cannot, we think that such inspection of ships, as is necessary, should be under the direct control of a Government Department responsible to the country at large, and should not be delegated to irresponsible societies. Nor is it enough that the Board of Trade have power to choose the registries which shall be entrusted with the privilege of granting certificates. If it be necessary to have a systematic inspection, that inspection must be performed by a body clearly and indisputably responsible to the country at large, and not to classes whose interests may or may not be the same as the sailor's.

We have further to notice that the proposed measure contemplates the extension of the present system of competition between the registries. Two registries are specially named—the two principal English ones—and it is, of course, seen that there must be no monopoly in the matter, but that the Board of Trade should be authorised to confer the power of issuing certificates of seaworthiness upon any other registry whose rules come up to their standard. We would remark, *en passant*, that the mere rules of a registry are, like all other rules, but a small part of the matter, unless there is some guarantee that they will be fully and impartially enforced; and how is this to be secured, if the only control to be exercised by the Board of Trade is represented by a six months' notice of disqualification? As to the injurious effects of competition,

we prefer to let the advocates of compulsory classification speak for themselves.

The Secretary of Lloyd's said, in evidence before the Royal Commission :—

“Lloyd's Registry has always been most anxious to keep up their character of ships, but from time to time competition has crept in. In the first place, the present book was established in 1834. Then, in 1841, there was an opposition book started at Liverpool. The competition caused by that book worked very badly, and tended to ships being sent out in an inefficient state. That went on until 1845, when an amalgamation took place between Lloyd's Registry and the Liverpool Book, upon which the Lloyd's Registry gave to Liverpool a branch of the London Committee. That went on till 1862, when there sprang up the Liverpool Iron Registry. The gentlemen connected with that society go in for business, and they know very well that unless they can induce builders to think by going to them they will be able to get a much lighter ship, and a cheaper ship classed than by coming to us, they will not do any business, and the consequence is that slim ships have been built, till at last ships are produced which are not satisfactory, and such ships as ought not to be allowed to go to sea. That is the result of competition.” And again, “Up to within five or six years since, we classed nearly the whole of the ships that were built in the Colonies; but the Bureau Veritas stepped in, and when they found that we made concessions, they gave further concessions. For instance, if we gave a vessel an eight years' class, they would give nine; if we gave ten, they would give eleven.” M. Bal, the Director of Veritas, says, “When Lloyd's took the direction of a diminution of the scantlings, and in favour of lightness of construction, Veritas could not work so as to cut across all that England had done. Therefore, Veritas allowed itself to be influenced by public opinion; but it was afraid that it was going too far, and in December last, considering the terrible evils of last winter, I summoned the Committee of Veritas, and told them that we must retrace our steps.”

Finally, we quote from Mr. Plimsoll's speech at a public meeting in Exeter Hall, on the 8th of April last, as reported in the *Standard*:—

“He had also to bring before the meeting some startling statements with regard to the structural weakness of many ships. Hitherto he had spoken of weakness arising from decay, but it appeared that there were certain vessels which were not seaworthy to start with, not only from the fact of their being built of bad materials and with bad workmanship, but also from the insufficient quantity of the materials used. That this was a fact he established by a correspondence between Mr. Laurie, a ship-builder of Glasgow, and Mr. W. W. Rundell, the Chief Surveyor and Secretary to the Liverpool Underwriters. Cast metal used on shore for

bridges and so forth, he said, was always required to be six times as strong as the strain which it would have to bear, and wrought metal two and a half times stronger, whilst the ordinary practice in building ships, of which there was abundant evidence, was only to leave a margin of 33 per cent. over the strain which would actually be required. This small margin of strength had, in the opinion of Mr. Laurie, been brought about by a mischievous competition and rivalry between the London Lloyd's and the Liverpool Registry. In the correspondence to which he had alluded, it was further stated that it was probable that no ship at present classed would bear more than the extra strain of 33 per cent."

Thus, while insisting upon the necessity of compelling all vessels to come under the inspection of the registries, and to be built under their rules, it is stated that the weakness of iron ships is due to the mischievous competition between them—a competition which it is proposed to retain. We must, however, explain, in justice to both Lloyd's and the Liverpool Registry, that although in some cases they have given their highest class to ships which did not have a desirable margin of strength, the case is not quite so bad as appears. In an able paper read before the Institution of Naval Architects last year, by one of Lloyd's surveyors, and with the sanction of the committee, it was pointed out that in the most severely strained parts of many iron ships afloat, there is a reserve of strength of less than 150 per cent.; bad enough, certainly, but not so bad as is made out. The error appears to have arisen by confounding proof strength with ultimate strength. In terms of the former, there may only be a reserve of 33 per cent. in some ships, but in both cast and wrought metal used for bridges the proof strength, according to Rankine, is usually two to three times the working stress, whilst the ultimate strength is in cast metal over six, and in wrought metal over four times the working stress.

With a view to meeting the cases of weakness in iron ships, it has been proposed to enforce rules as to the quality of iron. We do not intend, in the present article, to go into this question; we would merely point out that the Admiralty not only subject all iron used in the building of their ships to most rigid tests, but they also have resident surveyors who see that only the iron from which samples were taken for testing is worked into their ships. Such a minute supervision as this would, of course, be out of the question as regards merchant ships, but not the less necessary to a perfect survey of shipping.

We conclude, then, that if it be considered necessary to subject all our merchant ships to a compulsory and systematic survey, the survey must ultimately come into the hands of the Board of Trade. For the reasons we have stated, we believe that any delegation of the duty to registries would be but temporary, there being no other adequate security for the

efficiency of the survey than its being under the immediate supervision of a Government Department directly responsible to Parliament. Is it not desirable, then, before thus fettering the whole commercial marine of England, to give a further trial to the present system introduced by the Acts of 1871 and 1873? It is acknowledged that great good has been accomplished, that rotten ships are being weeded out, while no real injury is done to anyone. Whatever may be said to the contrary, we hold that a regular system of surveys and certificates must relieve the shipowner of responsibility. If a ship were lost, what jury would convict an owner of sending an unseaworthy ship to sea when he could bring forward a Government certificate of seaworthiness.

OUR COLONIES.—X.

THE FOOD PRODUCTS THEY SUPPLY.



SITUATED as the British Islands are in a temperate climate, with but a limited area for food production to feed our 32,000,000 of population, we are necessarily largely dependent on extraneous supplies, and it is well that we have numerous and extensive Possessions and Dependencies, with all ranges of climate, scattered over the face of the globe. Although these do not supply us with all the tropical and temperate products we require, still they contribute very largely to our increasing wants, as we shall be able to show, and with the introduction of labour and machinery they will continue to help us even more largely year by year. In wheat and flour, rice and maize, sago, arrowroot, and other farinaceous substances, they come to our aid, and for the dietetic articles of sugar, tea, coffee, cocoa, and spices, we are mainly dependent on them, and they are even beginning to contribute considerably to our wants in animal food.

Appended is a summary of some of the principal articles we received from our Possessions in 1873:—

			Quantity.		Value.
Sugar	...	...	cwts.	5,120,282	... £5,208,804
Tea	...	...	lbs.	18,471,063	... 1,522,193
Coffee	...	...	„	125,658,736	... 4,874,492
Cocoa	...	...	„	8,538,327	... 278,517
Rum	...	...	galls.	6,047,925	... 660,831
Sago	...	...	lbs.	279,766	... 221,798
Rice	...	...	„	6,269,846	... 3,055,405
Isinglass	...	...	cwts.	1,186	... 17,838

			Quantity.		Value.
Pepper	...	...	lbs. 24,629,444	...	769,191
Cinnamon	...	..	1,048,414	...	118,725
Other spices	...	..	768,882	...	56,887
Wheat	...	...	cwts. 5,568,226	...	—
Flour	...	...	.. 672,610	...	—
Preserved meat	...	..	261,212	...	783,848
Fish	...	..	218,066	...	298,663

The imports of wheat fluctuate according to the yield of our own harvest, but are gradually becoming larger. In the United Kingdom we have nearly 4,000,000 acres under wheat culture, but yet have to import 42,000,000 cwt. of wheat and 6,200,000 cwt. of flour, besides other vegetable food substances, to feed our population. It becomes, therefore, important that we should obtain some of our necessary supplies from British Possessions. Canada last year furnished us with 8,800,000 cwt. of wheat and 390,000 cwt. of flour; and our Australian Colonies can help us with supplies, even though the distance be great.

The following quantities reached us from our Colonies in 1873, in cwts. :—

			Wheat.		Flour.
Canada	...	...	3,761,863	...	442,982
South Australia	...	...	1,847,843	...	196,564
Victoria	...	...	116,011	...	15,690
New South Wales	...	...	38,059	..	9,620
Tasmania	...	...	54,535	...	—
New Zealand	...	...	249,915	...	7,754

Besides this we received large quantities of rice, maize, sago, and arrowroot.

The number of acres under culture with wheat in all the Australian Colonies last year was over 1,500,000 acres, and the produce 18,000,000 bushels. South Australia and Victoria are the largest wheat-producing Colonies, the former producing six to eight million bushels, and the latter about 5,000,000. New Zealand ranks next for about 3,000,000, and New South Wales follows with two and a-half to 3,000,000. The yield of wheat in some of the older Colonies is decreasing, as the land is becoming exhausted by sowing it year after year with grain, allowing neither manure nor rest.

In South Australia, the returns of the harvest of 1873 showed that there were about 785,000 acres under wheat, the average yield per acre being nine or ten bushels. There was a surplus of 200,000 tons for export, which, at the very moderate estimate of £10 per ton, gives £2,000,000 sterling as the result of the harvest, after supplying all local wants; this fact shows how important the agricultural interest is to

the Colony generally. That South Australian wheat and flour are the finest produced in the world, is seen by the fact that in London they fetch the very highest price ; and in the other Colonies are bought to mix with their own cereal produce. Victoria is, however, running South Australia very hard in the quality and quantity of its wheat production. The average yield in all the other Australian Colonies is in excess of that of South Australia, being for New South Wales, Queensland, and Western Australia, thirteen and a-half bushels per acre ; Tasmania, sixteen ; and New Zealand, twenty-five and a-half bushels.

But, besides wheat and flour, we draw other cereal and farinaceous products from our Colonies. Immense quantities of rice are received, and although only a small portion of this goes for the food of man, it is essential for manufacturing purposes, and for feeding stock. Every year the supplies get larger ; and in 1874, our imports of cleaned rice were 350,000 tons, nearly all from British India.

The varieties of rice are very numerous in the different countries where it is cultivated. The natives of India distinguish them a good deal by the size and shape of the grain. The chief commercial classifications however, in the East, are table rice, cargo rice, and white rice ; Java rice is inferior to that of Bengal or Carolina. This is not attributable to any real inferiority in the grain, but chiefly to the careless mode in which it is prepared for market. In husking the grain, it is much broken ; and from carelessness in drying, it is very subject to decay from imbibing moisture and the attacks of insects. Unhusked rice, or paddy, may be kept sound for many years ; indeed, for table use, rice a year old is usually preferred by judges. Of all the cereals it is the most compact, weighing seldom less than 65 lbs. to the bushel.

The Carolina rice of the Southern States, from its long brilliant grain, and careful cleaning, is that which is preferred for culinary use, and several attempts have been made to introduce this choice seed into India.

Although there are innumerable varieties cultivated, practically they resolve themselves into two kinds—the upland or mountain rice, and the lowland or aquatic rice.

Rice does not contain half as much gluten as wheat, but has one-fourth more starch in its composition, hence the preference given to it by our starch makers, both for its cheapness and its larger yield.

Although the great bulk of the maize or Indian corn we receive (18,000,000 cwt.) comes from the United States, yet Canada sends us about 2,000,000 cwt., and it is largely grown in New South Wales, Queensland, and several of our other Colonies. The 300,000 cwt. of sago, for stock feeding, &c., nearly all comes from the Straits' Settlements ; Singapore being the great seat of the manufacture.

Passing on, now, to the dietetic articles used for infusion and beve-

rages, we shall learn to value the importance of [our Colonies and Possessions, in the large and increasing quantities of sugar, coffee, cocoa, tea, rum, &c., with which they furnish us, and without which we should be mainly dependent on foreign producers. Year by year, as population centres in suitable producing districts, and, as agriculture progresses, as forests are cleared, and scientific improvements and machinery introduced, we are more largely aided by British skill and capital, and less dependent on foreign supplies.

The consumption of sugar has been greatly on the increase in the United Kingdom. Last year we imported and consumed over 800,000 tons, or more than all the rest of Europe. Indeed, we are the largest consumers in proportion to the population of any nation on the globe. Of the total imports of sugar, only a little over one-fourth (211,132 tons) came from our own Possessions. Of late years, owing to the bounty given by the French, we have been receiving very large quantities of beet-root sugar; in 1874, 138,800 tons, principally refined beet, was received from France and Belgium. Good cane sugar has been driven out of the market by inferior beet-root sugar, which, for household purposes, is 80 per cent. inferior, as every householder may prove by filling two large cups of tea and putting in each precisely the same weight of cane and beet sugar, and tasting the saccharine difference. By adding two teaspoonfuls of milk to each, the beet-root cup will be found detestably duller and darker.

Until within a few years ago British Guiana was the only British Colony except Mauritius in which vacuum pan sugar was manufactured, and Demerara alone made sugar suited to the wants of the British grocers. Now Barbados, Jamaica, and some other of the West India Islands have carried out this improvement.

The imports of sugar from the British Possessions in 1873 comprised the following quantities from—

The West India Islands	...	...	cwts.	2,730,793
British Guiana	...	...	„	1,094,856
Honduras	...	...	„	80,669
Mauritius	...	...	„	784,095
India	...	...	„	814,068
The Straits Settlements	...	...	„	108,924
Hong Kong	...	...	„	44,017
Victoria	...	...	„	12,860

5,120,282

But besides the above quantity exported, sugar is made for local consumption in Queensland, New South Wales, and Natal, and some small quantity from the sap of the maple tree in Canada.

Of molasses, 149,898 cwt. were received from the West Indies.

Rum, another product from the sugar cane, and which we require largely for the supply of our Navy, is furnished entirely from our own Colonies. The imports in 1878 were—

From the West Indies	...	...	...	2,813,665
„ British Guiana	...	...	...	3,841,847
„ Mauritius	...	...	...	390,350
„ Straits Settlements	...	...	...	2,063

Proof gallons 6,047,925

In 1861 there were but 71,217 acres appropriated to the tea plant in India, of which 13,222 were under culture, bearing an estimated crop of 1,788,737 lbs. of tea, and affording employment to 16,611 daily labourers. There were, in Assam, 160 plantations owned by sixty companies and individuals.

The tea exports from Lower Bengal in 1869 were 11,480,213 lbs., and it is also produced in Kumaon, Dhera Dhoon, Kangra, and the Neilgherries. In Assam there were then 290 plantations, containing 29,350 acres under tea, which produced 433,722 lbs. of tea. In Darjeeling, in 1869, there were 44 gardens, having a cultivated area of 10,067 acres, which yielded 851,549 lbs. of tea. In Sylhet 22 gardens, having 2,240 acres cultivated, which produced 240,000 lbs. In Cachar 118 plantations, and 24,374 acres under plant, and the produce was 4,110,000 lbs. of tea. There is a great future in store for Indian teas, as their excellent quality and perfect purity become known, not only in England, but in all the extensive tea consuming countries north of the Himalayas.

In the year ending April, 1872, the quantity of tea exported from Calcutta was 17,460,138 lbs., while the value of the exports in 1874 was £1,692,699; there is every reasonable prospect of a continued progress which will ultimately give Indian tea a foremost place among the productions of the country.

The tea plant seems almost cosmopolitan in its habit; it is hardy beyond any other plant with which we are acquainted, and both Europeans and natives have entered extensively as well as vigorously into its culture in India. All this, coupled with the excellent quality of the tea grown there, will doubtless soon make it an article for agriculture on which more attention will be bestowed, and more money spent, than on any other. The progress of the growth is very astonishing. The economic results of the industry have not yet been as fully examined as they should be.

There has been a great increase in the production of tea, of which 17,187,328 lbs. were exported from India in 1871-72, and 17,789,911 lbs. in 1872-73, worth £1,577,691. Such a state of things must be most satis-

factory to the planters, as it shows that Indian tea is obtaining a firm hold upon consumers, and once its use is commenced it cannot be discontinued, for its strength and pungency render it an indispensable adjunct to the comparatively weaker China kinds. Should the same high level of quality be kept up, there is nothing to prevent the vast area of land, evidently well suited for tea-growing in India, being rapidly brought into cultivation, and though such an extraordinary percentage of increase in the Indian exports cannot be expected to continue, still Assam, Cachar, and the slopes of the Himalayas, and Neilgherries may, in a few years, form a most formidable rival to China, and even in the course of time render us quite independent of China in case of any interruption of the supply.

The culture of tea has been introduced into several of our Colonies on a small scale, and with apparent success—in Jamaica, Natal, Victoria, and Ceylon. In the latter island the cultivation is making rapid advances, and the manufactured product is pronounced to be of excellent quality. Of the Assam hybrid, which is most in demand, additions to the plantings are being made as rapidly as possible, with the production of good supplies of seeds for distribution, as imported seed cannot be so well depended upon for germinating as that recently gathered from the trees.

The total production of coffee over the world is about 8,000,000 cwt., of which Brazil produces about one-half, which goes chiefly to the United States, the Dutch-Indian Possessions 1,000,000 cwt., and Ceylon and British India another 1,000,000 cwt. The rest is chiefly raised in the West India Islands and Central American States.

People in England seem to prefer tea to coffee, for the consumption here has rather declined than increased. Ten years ago the consumption averaged $1\frac{1}{2}$ lb. per head of the population; now it is barely 1 lb.

Other countries consume much more coffee than we do. In Belgium it is nearly 9 lbs. per head, in the United States it is about 8 lbs., in Switzerland 7 lbs., in Norway, in Sweden and Denmark about $6\frac{1}{2}$ lbs., in the Zollverein the usual consumption is about 5 lbs. In France, strangely enough, the average is only about 3 lbs. per head, which must be attributed to the high price coffee fetches there now, owing to the high duty and the extensive admixture of chicory.

The growth of coffee has been transferred from the West to the East Indies, because labour is more abundant, certain, and cheap. In the East, the production in Ceylon, Malabar, and Mysore is now enormous and progressive, and yet consumption is outstripping production, and prices advancing to the consumer.

In the fourteen years ending with 1862, the Ceylon planters sent into the markets of the world 6,571,618 cwt., valued at about £15,000,000 sterling. In 1871 the crop was nearly 800,000 cwt., and in the previous

year it was close upon 900,000 cwt. The production will ere long exceed 50,000 tons. In 1873, of the total imports (188,571,986 lbs.), about 125,658,736 lbs. came from British Possessions. The impetus given by higher prices has caused attention to be given to the resumption of coffee culture in the West Indies. Natal used to produce 500,000 lbs.; but the crop has been much reduced, owing to a disease in the trees, from over cropping and want of manure.

The special product of the Madras Presidency, besides cotton, is coffee, the great mass of which is brought down the ghauts from the hill districts of Mysore, Coorg, Wynaad, and the Neilgherries, to be shipped from the Malabar ports. Some is also shipped in South Canara and Tuticorin, as well as from a new port in Travancore. The whole quantity exported in the season of 1873 was 41,462,705 lbs., worth £1,128,549, besides that exported from the Travancore estates, the amount of which is annually increasing. The Travancore coffee district is on the Asambhu hills, in the extreme south of India, near Cape Comorin. Colachul is the port which was first occupied as a station for the preparation of coffee in 1873. It is twenty-five miles from the foot of the Asambhu hills, and the coffee is brought from the foot of the ghaut in carts. The estates cover 9,382 acres, of which 5,105 are planted. In 1872 about 500 tons of coffee were exported from Colachul, which was doubled in 1873. The first ship called there in March, 1871, and since that date other ships have loaded at the port, but a survey is urgently needed.

The principal colonial sources of our supply of coffee in 1873 were as follows :—

British India ...	...	...	...	lbs.	18,415,396
Ceylon ...	...	...	...	,,	95,190,032
Straits Settlements ...	...	...	...	,,	4,145,232
West Indies ...	...	...	...	,,	6,572,720
Honduras ...	...	...	...	,,	182,112
					<hr/>
					124,505,492

Cocoa and chocolate are comparatively little used in this country, as compared with the other dietetic beverages. The quantity taken for consumption last year was nearly 9,000,000 lbs., which was rather over a quarter of a pound for each person of the population. Of late years there has been a slight progress in the consumption. Trinidad and British Guiana supply us with sufficient for our demands, and that of foreign produce is principally sent to the Continent. Jamaica, parts of India, Dominica, and Grenada, are again turning their attention to the culture of the cocoa tree. In Jamaica there are now about 100 acres under

culture. The crop in Trinidad fluctuates from 56,000 to 68,000 cwt.s.

Let us pass now to a consideration of our wine supply, which, owing to the increased taste for this beverage among our population, is becoming an important consideration. Our Colonies may, before many years, become important purveyors to us of the pure juice of the grape. A little more than ten years ago the average consumption of wine per head was less than a quarter of a gallon, now it exceeds half a gallon, and is steadily increasing. Our Colonies, hitherto, have contributed little or nothing to our supplies, but many of them have all the requisites of experience, soil, and climate, and, under encouraging circumstances, will send us hereafter considerable quantities.

At one time there was a large export of Cape wines. In 1855 there were about 12,000 acres under culture with the vine in the western district of the Cape Colony, and the produce was 34,221 pipes of wine, and 4,496 pipes of brandy. In 1865 there were 16,000 acres under vine culture in the Cape Colony. In 1851 we imported 408,281 gallons of wine from the Cape. But the imports have been gradually getting less year by year, until in 1870 we only received 40,235 gallons, and in 1873 but 8,000 gallons. Some goes, however, to other quarters, for the total exports of Cape wines in 1873 were 75,200 gallons of ordinary, 778 gallons of Constantia, and 1,045 gallons of brandy, besides a considerable quantity consumed locally.

Cape wines are principally produced in the districts of Stellenbosch, Worcester, Swellendam, and George. In 1859, about 1,000,000 galls. were shipped; in 1865, only 198,000 galls.; and in 1872, but 78,000 galls., exclusive of 371 galls. of the sweet Constantia wine. This serious falling off is partly due to the heavy duties imposed under the provisions of the treaty with France, of 1860, which fixes the scale of duty at 1s. per gallon for wines under 26° of alcoholic strength, and 2s. 6d. per gallon beyond. It is found necessary to fortify Cape wines considerably, with a view of preventing deterioration and fermentation on the voyage.

The wine-growers of the Cape, in these circumstances, are naturally anxious that an uniform duty amounting to, say, 1s. 6d. per gallon, should be imposed on all Cape wines admitted into the United Kingdom, and that South African wines should not have a higher rate of duty imposed, unless they contain more than 38° of proof spirit. As compared with the wine-growers on the Continent of Europe, those of both the Cape and Australia are at present at a disadvantage.

If there is one fruit more than another which luxuriates in the sunny clime of Australia, it is the grape. According to the latest statistics, there are more than 16,000 acres under culture there with the vine, distributed as follows :—

Victoria	...	...	...	...	acres	5,222
New South Wales	...	...	...	...	,,	4,526
Queensland	...	...	...	...	,,	364
South Australia	...	...	...	...	,,	5,217
Western Australia	...	...	...	...	,,	775

16,104

The wine produced by these is—in Victoria, about 714,000 gallons; New South Wales, 500,000 gallons; and South Australia, 800,000 gallons. This is exclusive of the brandy distilled, and about 10,000 tons of grapes sold.

South Australia may now be regarded as one of the wine-producing countries of the world. There the vineyards average, for forty miles round Adelaide, at least thirty acres each; some exceeding a hundred acres, and many attaining to fifty. The whole of the country about the capital seems formed to be the home of those vines, which nature has destined to produce strong, generous, full-bodied wines. If as much well-directed care and attention were bestowed on studying the true nature and capabilities of the *musts*, as seems to have been expended on striving to force them to yield wines of a French or German character, the produce of South Australia would, ere now, have acquired even a better name than it enjoys. In South Australia nature herself is opposed to the production of these high-bouquet wines: there, she demands consideration for body, sweetness, spirit, and other high qualities of generous wines.

The Riesling and Verdelho, when not tortured, yield wines second only to the Bucellas of Lisbon, and the sweeter kinds of Madeira; while the Donzellinha, the Black Portugal, the Scyras, Mataro, and Grenâche, yield wines of the character of good port, such as it is known in Portugal, and the strongest of Hermitage, and that peculiar produce known as Roussillon. The produce of the Australian vineyards may vie with those of the most favoured countries of Southern Europe. The local consumption of Colonial wines increases year by year, and it is considered that they would compete successfully with the light wines of France in the English market, were they admitted at the same rate of duty. The price is yet too high to enable Australian wines to come into consumption here; but if the rapid progress of production continues, there will soon be a large surplus to export to other countries.

Although at present wine can scarcely become an article of much export from Australia, it is interesting to watch the progress of the cultivation, and to observe this peculiar development of the vine. It was remarked in the Jury Reports of the London Exhibition, in 1862, that with care and time, there is every prospect of these Colonies becoming the great

wine-growing countries of that part of the world. Since this opinion was enunciated, remarkable progress has been made, and the quality of Australian wines has received high favour, at the Dublin Exhibition of 1862; that of Paris, 1865; Vienna, 1873; and London, 1873. There is, as might be expected, in dealing with an area almost continental, and considering the numerous varieties of the vine that have been introduced from all parts of Europe, an infinite difference in the produce. We there find wines of the character of the German wines, others resembling the French wines, whilst some have the substance and body of the wines of Spain.

It was at one time considered that Australian wines would not keep well, but the question has now been settled in the affirmative, for their natural strength is such that they require no fortifying. For use as table fruit, trellised vines are preferred to standard. The raisins dried in some of the Australian Colonies are unsurpassed for size and flavour, and the same may be said of currants. In South Australia of late years the price paid for grapes for crushing has been, for Tokays and Madeiras, £4 per ton, and for Frontignacs, Verdeilhos, and Muscats from £4 10s. to £5. As many vineyards will yield three tons of grapes to the acre, it can be readily seen that vine growing is a really profitable investment.

For our spices we are almost entirely dependent upon our Colonies, and for these we pay nearly £1,000,000 a year. The pimento produced all comes from Jamaica; 25,000,000 lbs. of pepper reach us from India and the Straits Settlements; Ceylon supplies us with 1,000,000 lbs. of cinnamon; the East and West Indies and Africa supply us with all the ginger we want, upwards of 86,000 cwt.; the nutmegs, and mace and cloves from the Straits Settlements, and very many articles of minor importance, such as vanilla and essential oils for flavouring, might be quoted.

Even of green fruit our Colonies supply us with some quantities. Canada sent us 60,641 bushels of fruit, valued at £92,474, and the West Indies from 10,000 to 18,000 bushels of oranges, limes, bananas, &c., to say nothing of the many thousands of cocoanuts.

The pine apple is grown for export in the Bahamas in fields of large size and of considerable extent. The cultivation of this fruit is carried on chiefly at Eleuthera, Abaco, and San Salvador, but the plants are also grown on some of the other islands. They are of two kinds, the sugar loaf, the best, and the Spanish or red pine, an inferior fruit. They are cut in a green state to keep for so long a voyage, taking from twenty-eight to thirty-five days to England. Arriving in a sound state they pay very handsome profits. The first cargo of pine apples shipped to England was in 1842. In 1872 590,665 dozens of pine apples, valued at about £42,000, were exported. In 1874 the quantity shipped was valued at £40,066, the sales of one cargo in London being as high as £1,600 by

one of 14 vessels engaged in the trade. Within the last two or three years a steam factory for preserving pine apples has been started at Nassau, New Providence. In 1872 494,218 cans of pine apples, valued at £8,190, were preserved and exported chiefly to the United States. In 1873 the value of the canned fruit shipped was £14,700. The tin cans are made in the island, and between 200 and 300 hands are employed in making them and preserving the fruit. A large field is open to speculators abroad entering into the fruit business. The fruit when picked for shipment are sent off to London in the months of May, June, and July.

Even tobacco, of which we use such large quantities, almost entirely of foreign growth, might be furnished us in considerable quantities from our own Possessions, if proper attention were given to the culture and manufacture. In India the production is considerable; the tobacco harvest in Bengal is valued at nearly £2,000,000 sterling. Nearly 600,000 acres are returned as under culture in the several Presidencies with tobacco. The export from the chief Indian ports exceeds in value £800,000, but the quality of the product is not suited to the English market.

The Indian Government is, however, using strenuous efforts to introduce better varieties of the plant, and improve the quality of the manufacture. Our Australian Colonies now produce a good deal for their own consumption. Jamaica has gone largely into the culture and manufacture. Owing to the settling of many Cuban planters, very excellent Havana cigars are shipped to England from Cuba. Canada sends us a little tobacco. These are all earnest of future progress.

To turn now to the animal food, for which we are indebted to our Colonies. It will be impossible in this section to treat of the importance of our Colonial Fisheries, but we receive from our British North American Provinces about 218,000 cwt. of cured fish, of the value of about £300,000.

The enhanced consumption of butcher's meat in the United Kingdom has become an important consideration, and especially as to future adequate supply, the graziers being unable to meet the increasing demand. The larger consumption arises from two causes, which, in all probability will continue to operate—namely, the increase of the population, at the rate of 1,000 per day, and the improvement in the condition of the operative classes consequent upon the enormous extension of commerce and manufactures, and the abundant employment caused by railway and other national works.

The great efforts which have of late been made to improve the mode of preserving Meat for exportation, so that it may retain its palatable and nutritive qualities after a prolonged voyage, the interest excited by

the "frozen meat" experiment from Australia, though unsuccessful, and other attempts of a similar kind, all testify to the great importance attached to this matter, both with a view of increasing our food supply and diminishing its price. Should a satisfactory solution of this question be attained, the transport of animals—a traffic open to many objections—might ultimately cease to be necessary. In the last three years the annual average exports of preserved meat (chiefly from Australia) have been nearly 300,000 cwt.

The importation of foreign cattle is wholly confined to a few neighbouring States, owing to the danger and difficulty of longer sea-voyages, which involve a heavy percentage of loss by deaths. From those countries, too, whence we obtain the largest and best supply of cattle and sheep, the exportation appears to have reached its maximum—namely, 200,000 head of cattle of all ages, and 800,000 sheep and lambs. The question of our supply of animal food is important, seeing that our home production is insufficient for the wants of the people. In 1871, 31,700,000 people consumed 1,447,181 tons of meat, or 102 lbs. per head. That was equal to a demand for 1,800 head of cattle, sheep, and pigs every day. By the agricultural statistics of last year there were about ten and a-quarter million head of cattle, and nearly 35,000,000 of sheep and lambs, in the United Kingdom. An idea of the relation of our cattle and sheep to the requirements of the population may be gathered from the statement that the actual live weight of the whole numbers, as nearly as can be estimated, gives 247 lbs. for each person in the United Kingdom.

The Australian Colonies, with a population of but a little over 2,000,000, possessed, in 1874, nearly 6,000,000 head of cattle and 58,000,000 sheep, thus distributed :—

		Cattle.		Sheep.
New South Wales...	...	2,710,374	...	19,928,590
Queensland	...	1,348,098	...	7,268,946
Victoria	...	888,768	...	11,323,080
South Australia	...	174,381	...	5,617,419
Western Australia	...	47,640	...	748,586
Tasmania	...	106,308	...	1,490,746
New Zealand	...	494,118	...	11,674,863
		5,759,672		58,052,180

Should any process be discovered by which beef could be sent from Australia or other distant places where it is produced at a low price, and reach this country in such a state as to be a substitute for freshly-killed beef, it would go far to supply our wants, and prevent the inevitable rise in price resulting from increased demand for a commodity which can only be produced here in greater quantities at an increased cost.

The proportional consumption of foreign animal food substances consumed in this country in 1878 was—

Bacon and hams	...	...	...	...	lbs.	9·07
Butter ...	...	...	...	...	„	4·89
Cheese ...	...	...	...	...	„	4·69
Beef, pork, and preserved meats	...	...	...	...	„	5·50

Besides lard, poultry, game, and other articles in smaller quantities.

The demand for these animal substances from abroad has been constantly on the increase. The quantity of foreign animal produce received is therefore only in the proportion of about 23½ lbs. per head for each person of all kinds of the population.

There is no reason why we should not in future years receive large supplies of butter and cheese from the Australian Colonies as we already do from British North America. Several of the Australian Colonies sent very fair samples of butter and cheese to the food collection in the London International Exhibition of 1873. Labour is, it is true, an expensive element there, but improved churns, cheese presses, &c., can be had, and much of the now wasted milk might even be utilised for commerce in the form of condensed milk.

The facts and figures thus hastily summarised, will serve to place in a prominent light another feature of the importance of her Colonies to Great Britain.

COURTS OF INQUIRY.



HERE is, perhaps, no part of the proposals in the Merchant Shipping Bill now before Parliament which aims at a more important amendment of our law of merchant shipping than that relating to Courts of Inquiry into wrecks and casualties at sea. The constitution of these Courts was founded by the Merchant Shipping Act of 1854, and twenty years' experience of the system has only served to bring out in strong relief their inherent defects. We must not be understood to say that these tribunals are useless, or that their conclusions are often incorrect. They have elicited a great body of facts relative to the causes of maritime disaster, and have led to many improvements by directing attention to dangers in navigation which had previously escaped attention. But they have not fulfilled the purposes of which they are capable, and with a view to which they were originally constituted. This arises not so much from a defect in the constitution of

these Courts as from the course of procedure which has been adopted in them. They are inquests with a quasi-criminal jurisdiction. The inquiry may contain a dormant indictment against the master or his officers, and the proceedings against the latter advance *pari passu* with the inquiry. The parties arraigned on their certificates are not charged with any offence—the charge is, so to speak, developed during the inquiry—and a master, mate, or engineer, who has had no charge preferred against him, and, consequently, cannot know how to prepare his defence, may, at the close of the proceedings, find himself by the judgment of the Court deprived of his professional reputation and his means of life. Such a state of things is not reconcilable with any principle of English law, and the only wonder is that the Legislature could have been induced at any time to sanction it. Against the constitution of these Courts the main objection is, that they may be composed of the local justices and of assessors appointed by the Department which institutes the proceedings. The investigation may, it is true, be conducted before a stipendiary magistrate, but his services are only available in a few districts; and in all other parts of the kingdom these important inquiries are submitted to a tribunal on which there may exist a large amount of local prejudice, where there is no legal knowledge, and no skilled capacity for eliciting facts by cross-examination. The justices are guided by the assessors, and yet the assessors stand behind the justices. If the person who appears to conduct the proceedings on the part of the Crown possesses the requisite knowledge and ability, he may succeed in eliciting the facts; if he does not, the examination of the witnesses falls to the nautical assessors, who, often knowing nothing of the art of cross-examination or of the rules of evidence, harass the witnesses without exhausting them, get into new matter, and waste the public time without in any way advancing the object of the inquiry. The Government have become alive to these defects in the constitution and procedure of these Courts, and the new Bill discloses an honest intention to remove them. It is proposed in the first place to separate the inquiry into the casualty from the investigation into the conduct of masters and officers, and to constitute the Court in both cases of a stipendiary magistrate or County Court Judge with Admiralty jurisdiction, and in Scotland of the Sheriff, to be assisted by an assessor or assessors of competent skill and knowledge to be appointed by the Judge of the High Court of Admiralty or the Lord President of the Court of Session. By this amendment the local justices, like the Local Marine Boards, will cease to have any jurisdiction in matters of inquiries into wrecks and casualties, or into charges of alleged misconduct of masters and officers, and the jurisdiction of the Board of Trade will be limited to the institution and conduct of the proceedings. These are comprehensive and very important changes, and they will, if carried out, remedy the most conspicuous evils in the

existing constitution of these Courts. The Board of Trade, in conducting these cases, may appear by their solicitor or otherwise. And here it may be observed that the employment of local solicitors to conduct these inquiries—a practice which appears to be on the increase—is liable to the same objection as the appointment of local justices to preside at them. A local solicitor, whatever his standing or capabilities—and they are seldom of a nature to mark him as a fitting person to represent a public department on such occasions—can never be wholly free from local influences, and he may at any time be placed in the painful position of having to disregard them, and so injure his local practice, or to fail in his duty in the conduct of the inquiry. These investigations into wrecks and casualties at sea, and the conduct of masters and officers, have assumed great public importance. It is the plain duty of the Legislature to see that every facility is afforded for their proper conduct, and of the Government to see that those facilities are employed to the fullest extent and the best manner. Everything, so far as the elucidation of facts is concerned, depends upon the manner in which the inquiry is conducted. Masters, officers, and owners, are represented frequently by able, and, occasionally, by eminent counsel. It may not suit the defence to have certain facts gone into and brought out, or the witnesses for the Crown are subjected to searching cross-examination, without having their evidence set right by re-examination. It is obvious that if the person appearing for the Crown is overmatched by the counsel for the defence, the facts will never come out, and the inquiry must be a failure. Worse than that, there is the danger that the report may be based upon an entirely erroneous estimate of the force and effect of the evidence. We say nothing of the aspect of the investigation under such circumstances. We are not aware that an inquiry into loss of life and valuable property is of less public importance than the investigation into the conduct of a naval officer who happens to strand or to lose his ship; and yet a court-martial may be conducted on the part of the Crown by a member of the Government, or by his deputy, who is, we believe, always a member of the bar. There is a sound policy underlying this arrangement. It is proper that an inquiry into the loss of one of Her Majesty's ships, or into the conduct of an officer bearing Her Majesty's commission, should be surrounded with adequate circumstance. The event, and the subject matter of the inquiry, are of special public consequence, and the investigation is invested with commensurate importance. The loss of an ocean steamship of these days with, it may be, hundreds of lives, and hundreds of thousands worth of property, is surely an event of not less public consequence than the loss of one of Her Majesty's ships. We may be quite sure that the public think so, and they would not object to

any arrangement for increasing the efficiency and importance of the investigating tribunal. The impress of our Courts of Justice, and more particularly of our Courts of Equity and Common Law, are in no small degree due to the superior tone which pervades them. They are properly invested with character and dignity, and these exercise a most salutary influence in the administration of justice.

It has been objected that before these Courts of Inquiry a *locus standi* has been refused to those who are deeply interested in the result of the investigation. The objection is well founded. The Merchant Shipping Act, 1854, provides that the master or officer whose conduct is called in question shall have "a full opportunity of making a defence either in person or otherwise;" but the owner of ship and cargo, or the underwriters, may have an interest in the inquiry even greater than the master or officers, yet, as the law stands, the Court may refuse to hear them, or counsel on their behalf. At an ordinary inquest before the coroner, all parties who may be interested in the inquiry have a right to be present, and are afforded an opportunity of eliciting any facts which may affect them. There seems to be no reason why a similar concession should not be made to owners and others who may be affected by the evidence adduced at Courts of Inquiry into wrecks and casualties. Of late—since the case of the *La Plata* was investigated—it has been the practice to permit the representatives of owners and others to examine witnesses, and address the Court, but there is no legislative provision on the subject, and what one magistrate concedes another may refuse. There can surely be no objection to a provision in the new Bill whereby a *locus standi* would be secured to all having a *bonâ fide* interest in the inquiry, leaving it to the president of the Court in controlling the proceedings to prevent any abuse of the privilege.

THE "BESSEMER" STEAMER.

MOST of our readers are doubtless acquainted with the incidents of the trial trip of the *Bessemer* on the 8th May, and of the partial ill-success attending the experiment. The inventor of the swinging saloon said with much truth on that occasion:—"In the history of all new inventions, the first idea you will find has to be enlarged upon. New requirements suggest themselves, and much has to be done before theory corresponds with practice." It might be added that when the invention has finally proved itself a success the partial failures are forgotten, and the popular idea of it all is, that

the whole project sprang fully developed, Minerva like, from the brain of the inventor.

To rightly apprehend the difficulties of the work attempted by the projectors of the *Bessemer* steamship, it may be desirable to state briefly some of the important facts of the case. The necessity for a better means of communication between England and France has long been felt, and the proposals for meeting that necessity have been very numerous and of a very diversified character. A tunnel under the Channel suggests itself as the very best thing that can be done, but the most sanguine advocates of a tunnel ask a very long time to make it, and unexpected hindrances would doubtless add largely to the fairest estimate. Next comes the question of harbour accommodation, and it is pretty well understood that with good harbours a better class of boats could be used, and even without any more than the advantages which would necessarily accompany a large vessel a great improvement would be made upon the present service. Could a vessel be constructed which should use the present harbours, be large enough to admit of a high speed being attained, and at the same time by special arrangements reduce or entirely neutralize the effects of the motions which must exist even in a large ship? The *Bessemer* represents an attempt to do this, and at the same time to provide such luxurious accommodation as would cause the Channel passage to be a grateful rest between two railway journeys, to be looked forward to with pleasure, rather than as now with apprehension. The prospectus of the company states that their steamers were to be 350 ft. long, 40 ft. broad, and to draw $7\frac{1}{2}$ ft., to be propelled by two sets of paddles, the engines working up to a combined horse-power of 4,600 indicated, from which "a high rate of speed, probably twenty miles an hour," not twenty knots, as we have seen erroneously stated in a daily paper, was promised. The leading features of the design were stated to be, in the first place the central saloon, a magnificent apartment of 50 ft. clear length, 30 ft. wide, and 20 ft. high, placed at the middle of the ship, at the part least affected by longitudinal rolling or pitching, and having special apparatus for controlling it, so that it would not follow the vessel in her transverse rolling, its occupants being thus practically guaranteed against the two chief causes of sea sickness, at least the two most likely to be felt in so large a ship crossing the channel. Being near the middle of the vessel they would not feel much of whatever pitching the vessel was liable to, and the ship altogether being so large, compared with any waves likely to be met in the Channel, there would be but little of that bodily lifting and falling of the ship which is said to be a chief cause of sea sickness in small vessels. Again, the saloon being suspended in the ship and not rigidly connected with it there would be little inconvenience caused by the vibration due to the machinery. The

pitching would it was thought be still farther reduced by the low ends which gave the vessel such a curious almost ugly look, but the chief object of that peculiar feature, appears to be as stated by the designer :— " That advantage is this :—although the ship is 350 ft. long in the water, she is only 250 ft. long above the water where she is exposed to the wind ; so that not only shall we escape the risk which other long ships will be exposed to of being blown across the harbour entrance in a gale, but we shall positively be better off than smaller vessels in this respect, because while we shall have a comparatively small surface exposed to the wind, we shall have a greatly lengthened surface immersed in the water to resist the leeway resulting from the wind's action." The central saloon necessitated the duplicate paddle wheels, which, although there is probably some loss of power caused by the arrangement, will be found of considerable use in rough weather in securing a uniform rate of speed, and will also materially lessen the danger which would be caused to so large a ship by a break down of the machinery on the passage. The great length renders it impossible to turn the vessel in the small harbours of Calais and Boulogne, and hence the arrangement of a rudder at each end. Lastly, in particularising the special circumstances of the case which determined the peculiar features of the design, we must notice the draught of water—one of the most important. At low tide there is only 7 to 8 ft. of water at Calais, and hence, for a steamer to perform a regular fixed service in connection with the trains, it is a *sine qua non* that she must draw less than 8 ft.

Those of our readers who have read the accounts of the trial trip given in the daily papers, will probably be disposed to thus summarize what they have read :—The swinging saloon does not yet swing, the *Bessemer* does draw more than 8 ft. of water, her speed is very much less than twenty miles an hour even in fine weather, and she is not adapted for the present French harbours because of her great length, and consequent liability to be swung round by the tide. So much, apparently, has performance fallen below promise, that some of our contemporaries have gone so far as to say that the *Bessemer*, whatever else she may be adapted for, cannot be used successfully as a passenger boat between Dover and Calais until there is a larger and better harbour made on the French side. We are, at present, far from any such conclusion as this, and so we think will our readers be after hearing what can fairly be said on the other side of the question.

First, as to the draught of water, which is stated as little short of $9\frac{1}{2}$ ft., that is nearly 2 ft. more than was promised in the original design. This, we should suppose, represents an addition of more than 600 tons to the total weight of the ship and her equipment, as originally estimated, which, according to her published dimensions,

must be about 80 per cent. It would appear that this is not largely due to the saloon, the total weight of which is stated at only 180 tons,* but may, however, partly be caused by the weight of the machinery for controlling and for fixing it. There are some features about the ship herself which must have caused considerable weight to be put in places where there is not so much in ordinary designs. There is, of course, the large aperture in the upper deck for the saloon, a gap, 70 ft. long and 25 ft. broad, necessitating an increase of weight to give the required strength, and there are doubtless many places where weight has crept in as the ship has progressed, her builders having thought it best to be always on the safe side as regards strength. Her strength is pretty well indicated by the way in which she dealt with Calais pier. Among other causes of extra weight, two large cranes for lifting passengers' luggage have been rather severely criticised. It certainly does appear somewhat unreasonable for a vessel to have to carry about with her appliances which could as easily be placed on the wharves at which she unloads. To the increased displacement must, we think, be put down the falling off in speed. The area of the midship section, as calculated from the published drawing, is 280 square feet, at a draught of $7\frac{1}{2}$ ft., an addition of 2 ft. draught adds 80 ft., and then there is the further disadvantage that the extra volume immersed detracts from the fineness of the ship. We have seen that 17 knots was the speed really promised at first; it is said that $13\frac{1}{2}$ knots is the utmost speed attained on the trial, and the passage each way was made in an hour and a half. The extra draught of water is not, however, without some slight advantage. Mr. Reed has said, not, as has been stated, that he had doubts of her steering under ordinary circumstances, but that he had doubts of her behaviour in bad weather, and at one time it was contemplated that a rudder should be fitted, capable of being lowered in deep water, it being seen that, among large waves, such a shallow ship would frequently have her rudder out of the water. The accident on the trial was not, we should think, occasioned by any defect in the steering apparatus, but simply from the great length of the vessel and the smallness of the harbour. It would be extremely hazardous to run so large a vessel at full speed, and anything less than full speed does not appear to give steerage way sufficient to obviate the effect of the very strong tide setting against the side of the ship. If it be decided, as we think is clearly desirable, that the *Bessemer* should only perform a tidal service, being timed to arrive at Calais just about high water, or at the time near high water when the current is at its slackest, this difficulty will be got over, and the vessel will not be, as her designer humourously

* *Engineering*, March 19th, 1875.

described her, a standing menace to the French piers. We much incline to the opinion that if the *Bessemer* can be made to answer in her most important feature, neither her extra draught of water, nor her moderate speed will stand in the way of her success. The rolling of the ship is checked somewhat by the unusually deep bilge keels, but it has not been sought to do more than check it; at least, we gather as much from what has fallen from the designer of the ship on this point. It is, indeed, easy to see that the most unmanageable kind of rolling would be a short, quick, uneasy movement, and that the motion most easily dealt with by any controlling apparatus, would be just the long, deep roll which, unchecked, would be most unpleasant to passengers. We cannot believe that any but an automatic apparatus will be quick enough to deal with the swinging saloon. For our views on the special automatic apparatus, which will not, and on that which will succeed, we refer our readers to our number for November, 1874. We have not seen, and do not now see, any reason to modify the views therein expressed.

ATLANTIC STEAM FERRIES.—II.

By E. HEPPLE HALL.

THE ALLAN LINE.

IN this driving, go-a-head age, a retrospect, though it may be sufficiently gratifying to our vanity, often loses much of its significance and interest by reason of the distance through which it is made, and the complexity of the circumstances under which great changes and improvements have been brought about. It is easy, for instance, to remember that the early Kings of Egypt built big ships just as they built the Pyramids; that one of the Ptolemys possessed a "first-rate," 420 feet in length, propelled by 4,000 rowers; and that the *Great Eastern*, built by Archimedes, for Hiero, of Syracuse, was scarcely less imposing in her appearance than her Millwall-built namesake of cable-laying notoriety, with which vessel and her achievements, the readers of the *Nautical Magazine* have long been familiar. But it is far less easy to trace all this progress step by step and to note the influences under which the wonderful transformation scene has been effected, than for us whose lot is cast in a cycle when upwards of a thousand steamers annually cross and recross the North Atlantic ocean, to realise the difficulties which the early pioneers of oceanic steam navigation had to encounter.

The age of iron has had its obstacles not less than the age of wood. It was at one time, indeed, all but universally believed that the necessity

imposed upon steamers of carrying sufficient coal for so long a voyage would effectually prevent the establishment of a regular line of steam traders between this country and America. So recently, indeed, as 1835, no less erudite an authority than Dr. Lardner affirmed, in the course of a lecture delivered by him in Liverpool in December of that year, that the project of running steamers direct between the two continents was perfectly chimerical, and that the promoters of such a scheme might as well attempt to establish a line between the Mersey and the moon as between Liverpool and New York. Nor was Dr. Lardner alone in his scientific prophecies. Similar prognostications were indulged in by many other *savans*, and the nicest calculations, based on established principles and facts, were made to demonstrate the impracticability of the proposition. To accomplish a voyage of the same length as that across the Atlantic, they said, "two tons of coal" will be used for each horse-power of engines; that is to say, if the engines are of 300 horse-power, they will consume 600 tons of fuel before they reach the terminus of a 3,000 mile voyage. But a spare supply must also be carried to provide against accident or delay; so that the quantity must be increased to 700 tons. On the other hand, if the tonnage of the vessel be more than four times its horse-power, the latter will be inadequate to its propulsion at the ordinary rate of steamships. The tonnage of the vessel, therefore, could not exceed 1,200, and, after making allowance for cabins, machinery, boilers, ship's stores, &c., the space left for fuel would not contain more than 500 tons, which would all be consumed "before the vessel arrived within 500 miles of the Atlantic coast." We have already shown in our first paper in the April number of this magazine, how all these solemn and scientific predictions were falsified at the very moment they were being made. The success of the *Sirius*, the *Great Western*, and the *Britannia*, demolished for ever the objections of the learned, and within a few years a regular line of steam communication had been opened up between the two continents.

For the past quarter century, the progress of ocean steam navigation has been wonderfully accelerated. From 1840—the year of the *Britannia's* first voyage—to 1850, there was but one line of steamships plying between Great Britain and the United States of America. In the latter year, the various provinces now forming the Dominion of Canada, stimulated to activity no doubt by the rapid progress of events in the adjoining States, as well as by the success of the Cunard Line, determined to enter vigorously into the struggle for recognition as a commercial power in the world. To Canadians the story of the growth of the Allan Company must be especially gratifying, for to a very great extent it is identical with the progress of the Dominion itself. Its present position in the first rank of European steamship lines is an eloquent

testimony not only to the magnificent resources of Canada, but to the ability and indomitable energy with which the fortunes of the Dominion have, in the teeth of every obstacle, been built up. And this wholly without the fostering aid of Home Government. When the history of Canada comes to be written, it will be seen how little its present proud position before the world has been owing to its connection with Great Britain, and how much to the foresight and enterprise of such men as Sir Hugh Allan, Sir Cusack Roney, and C. P. Brydges, of the Grand Trunk Railway, which may very properly be regarded as an extension westward of the Allan steamship system.

Up to the year 1840, some seven or eight sailing craft, of 300 to 400 tons burthen each, sufficed to carry on all the trade between Great Britain and Canada; now, the Allan company, alone, possess upwards of 25 steamers and 13 sailing ships, with a carrying capacity of nearly 70,000 tons, the bulk of which is engaged in the Canadian trade.

The corporate name, by which the well-known firm of Allan Brothers is styled, the "Montreal Ocean Steamship Company" was given to it in 1856. Prior to that date, it was known as, and is still, more familiarly called the "Allan Line." The name of Alexander Allan of Glasgow—like that of Inman, Guion, and Topscott of Liverpool—was early known in the shipping annals of either hemisphere. Indeed, to note the early operations of this house in connection with the North American trade, we must go back fifty years at least. More than half a century ago, Alexander Allan of Glasgow, possessed a fleet of sailing ships trading between the Clyde and the St. Lawrence, Montreal being then, as it is now, the Canadian head-quarters of the house. It will thus be seen that the Allan connection with Canada is of a very old date, and that the Company which is now identified with the vigorous maturity of Canada's commerce was, so to speak, present at its birth. For many years the trade was carried on by Mr. Alexander Allan alone. He was succeeded by his sons, Mr. James Allan, Mr. Bryce Allan (lately deceased), and Mr. Alexander Allan, jun., who continued to run the sailing fleet from Glasgow to Montreal, and likewise established a service from Liverpool to Montreal. In the meantime, Mr., now Sir Hugh Allan, who went out to Montreal at an early age, became a member of the firm, with Mr. Andrew Allan (both of them also sons of Mr. Alexander Allan), constituting the five Allan Brothers in whose name the operations of the Company have been conducted. Within the last few years some younger members of the Allan family have been introduced. These were the men who, with others, for the most part of Scotch birth or descent, began to turn their minds to the development of the country, by railways, canals, and the establishment of regular and rapid communication with the mother country. The

large and annually increasing tide of emigration which was setting towards the Western United States attracted their attention, and in some degree naturally aroused their jealousy. They could not sit supinely down without an attempt to find out whether there were not a fair proportion of Englishmen, Scotchmen, and Irishmen, who, while they desired to emigrate, did not altogether relish the notion of deserting the old flag.

One of the results of this awakening was that negotiations were entered into by the Allan Company for the establishment of a line of steamships to accommodate the growing trade between Canada and Great Britain, and to carry the mails. The English branches of the firm at this time were Messrs. James and Alexander Allan, of Glasgow, and the late Mr. Bryce Allan, of Liverpool, possessing a sailing fleet of fifteen vessels. The sailing traditions of the Company, although they are fast dying out, are still represented by the considerable fleet before mentioned. In the year 1852, two fine iron steamships, upon the screw principle, were added to the number. These were the *Canadian* and the *Indian*, each of about 1,500 tons burthen, and about 250 horse-power. They were intended to run regularly between the Mersey and the St. Lawrence, but after a short time, the imperative demands of the Crimean war, which absorbed all the steam fleet of Liverpool, led to their being employed in the transport of troops, of which they conveyed a large number to the Crimea—the British from Portsmouth, and the French from Marseilles. In this and similar services they were engaged during the continuance of the Crimean war, the many odd reminiscences and queer and laughable adventures of which are still preserved as traditions among those of the Company's employés who were engaged in them.

In 1856, as has been elsewhere stated, the firm of Allan Brothers assumed the name of the "Montreal Ocean Steamship Company." At this time the fleet consisted of but four steamers—viz., the *Canadian* and *Indian*, first alluded to, and the *North-American* and *Anglo-Saxon*. In the commencement of the following year, the Allan Company contracted with the Canadian Government for a fortnightly mail-service between Liverpool and Quebec in the summer, and Liverpool and Portland (Maine), in the winter; the navigation of the St. Lawrence river being impracticable during the winter months. This contract became operative in 1859, as a weekly-service, and has up to the present time been maintained by one of the steamers sailing, *via* Londonderry, every Thursday, and returning, either from Quebec or Portland, every Saturday.

In 1872, our Colonial mail-service was still further extended by the establishment of a third, with Newfoundland. By arrangement between the Allan Company and the Dominion Government, during nine months

of the year, the Halifax boats call at St. John's both going and returning. During the remaining three months of the year, when the navigation between these ports is impeded by ice, the *Newfoundland*, a wooden auxiliary steamer, of 900 tons, specially constructed for the purpose, conducts the service.

The following is a complete list of steamers now composing the fleet of the Montreal Ocean Steamship Company :—

STEAMER.	GROSS TONNAGE.	NET TONNAGE.	HORSE- POWER.	CABIN ACCOM.
<i>Sardinian</i>	4,200	2,800	675	120
<i>Polynesian</i>	3,988	2,023	675	120
<i>Sarmatian</i>	3,911	2,175	650	100
<i>Circassian</i>	3,200	1,845	550	100
<i>Scandinavian</i>	2,840	1,811	500	100
<i>Prussian</i>	2,794	1,776	500	90
<i>Austrian</i>	2,458	1,650	450	115
<i>Nestorian</i>	2,466	1,677	455	115
<i>Moravian</i>	2,481	1,671	400	80
<i>Peruvian</i>	2,320	1,570	400	100
<i>Hibernian</i>	2,752	1,726	400	80
<i>Nova Scotian</i>	2,950	1,850	400	80
<i>Caspian</i>	2,728	1,788	400	80
<i>Manitoban</i>	2,395	1,543	300	25
<i>Canadian</i>	2,401	1,531	280	25
<i>Phœnician</i>	2,350	1,500	275	30
<i>Waldensian</i>	2,300	1,700	275	30
<i>North American</i>	1,673	1,138	250	75
<i>Corinthian</i>	1,517	919	170	40
<i>St. Patrick</i>	1,210	894	120	20
<i>Acadian</i>	981	596	100	—
<i>Newfoundland</i>	900	550	100	40
<i>Rocket</i>	350	175	100	—
<i>Meteor</i>	250	150	75	—
<i>Mersey</i>	227	50	20	—
	55,587	34,499	8,520	1,565

With reference to some of these steamers, namely, the *Phœnician* and *Waldensian*, formerly the *St. Patrick* and the *St. Andrew*, the *St. David*, the *Corinthian*, and the *Manitoban*, it should be stated that they are engaged in what is now a weekly, but which up to 1870 was only a fortnightly service between Glasgow and Montreal, for the conveyance of passengers and goods. In addition to this trade the Allan Company, when it was requested by the Dominion Government, on the occasion

before mentioned, to undertake the fortnightly mail service to Halifax, established connections with the Southern United States Ports of Baltimore and Norfolk, which passengers to the Western States frequently choose as their route by way of the Baltimore and Ohio Railroad, and the newly-constructed Chesapeake and Ohio Railroad, which comes down to Norfolk. The people of Norfolk, Virginia, warmly welcome the establishment of the service in 1871 as an event in their history, and are doing everything they can to encourage the trade, which is growing in a very satisfactory manner, both there and at Baltimore. The service to Baltimore and Norfolk, *via* Halifax, is performed monthly.

Let us now go back for a moment to 1859, when emigration and traffic to Canada first began to assume the mammoth proportions which they have ever since maintained. In that year the Company added four steamers to their line, making a fleet of eight steamships, with which the weekly mail service was conducted.

From that period up to the present time, successive additions have been made in the following order: The *St. Patrick*, *St. Andrew*, *St. David*, *Corinthian*, *Manitoba*, *Caspian*, *Moravian*, *Hibernian*, *Peruvian*, *Nestorian*, *Austrian*, *Prussian*, *Scandinavian*, *Sarmatian*, *Polynesian*, and the *Circassian*. The *Polynesian*, the largest vessel at present in the fleet, was dispatched on its first voyage in October of 1872, and made the extraordinary passage of 7 days, 18 hours, and 55 minutes, between Quebec and Londonderry. The *Circassian*, the latest addition to the Allan fleet, sailed on its first voyage on the 24th April, 1873.

The *Sardinian*, launched in June last, is three hundred tons larger than the *Polynesian*, and thirty feet longer than the *Sarmatian*. She will be ready to take her place in the line during the coming summer, probably this month.

In addition to the proud distinction of being the first to develop our steam trade with Canada, to the Messrs. Allan belongs the honour of inaugurating a successful steam service with the most flourishing Southern sea-ports of the Great American Republic, thus giving both to emigrants and shippers the widest possible latitude of choice in the selection of a field for their labour or market for their merchandise.

In order to enable the reader justly to comprehend the whole extent and scope of the Allan Company, we must now mention the Allan Line of sailing ships:—*Strathearn*, 1,704; *Strathblane*, 1,363; *Ravenscrag*, 1,229; *City of Montreal*, 1,187; *Pomona*, 1,097; *Chippewa*, 1,096; *Eumenides*, 1,095; *Cairngorm*, 1,016; *Abeona*, 980; *Glenbernie*, 799; *Gleniffer*, 790; *Medora*, 781; *Cherokee*, 652; making altogether thirteen sailing ships, with a total of 13,789 net register tonnage.

Add to these the twenty-five steamers and 55,587 tons before enumerated, and we have a total fleet of thirty-eight vessels, valued at upwards

of £2,000,000 sterling, with a capacity of 69,876, or in round numbers 70,000 tons, more than three-fourths of which are engaged in the direct trade between Liverpool and Canada.

The steamers are not classed at Lloyd's, nor with the Liverpool underwriters, the owners having their own standards of strength, &c., which, however, are much in excess of the requirements at Lloyd's.

The ships at present in use are fine iron vessels, some of them, such as the *Gleniffer*, possessing great sailing powers. They are, for the most part, engaged in trading between Liverpool and Quebec and Montreal, and Glasgow and Quebec and Montreal. When Canadian freight is not to be had, some of the vessels are despatched to Calcutta, Bombay, and other ports. Up to about ten years ago, two voyages out and home in the season, which was held to last about eight months, was considered fair work for one of these sailing vessels; but those now engaged in the trade make regularly three voyages. The *Gleniffer*, in the year 1871, made four voyages to Quebec and back during the eight months of the St. Lawrence navigation. In addition to this, the *Gleniffer* made one voyage to New York within the twelve months, and had one month to be in port before the next opening of the St. Lawrence navigation. Her shortest passage was made in fifteen days from Quebec to Greenock.

Those of our readers who have read the first paper on the Cunard Line, will be prepared to hear something of the construction and capacity of the Allan steamers. The *Circassian*, now in the commencement of her third year of service, furnishes, perhaps, the best illustration of the boldness which has characterised the policy of the Messrs. Allan in the conduct of their magnificent undertaking. The *Circassian* is fitted with engines so constructed upon a new principle of valve gear as to secure a high pressure of steam on a single cylinder, combined with a considerable saving in the cost of construction and in consumption of fuel. This is an experiment which, if it is successful, will have all the effect of a revolution in the steam trade of Liverpool, for its value is so obvious that every vessel fitted with the old compound engines will be at a disadvantage as compared with the inverted single cylinder fitted with the Spencer valve gear.

A good deal has been said from time to time, on both sides the Atlantic, in regard to which line could boast that paramount advantage, in the estimation of all who love land rather than sea-travel, the shortest voyage. This was claimed by Mr. J. Orrel Lever for his trans-Atlantic steamship project, known as the "Galway Company;" but as the line never assumed any more substantial form than the company's prospectus furnished, it is scarcely worth while to consider its claims

here. Undoubtedly the shortest sea route between England and America is that now navigated by the Allan steamers, the distance from Moville to Quebec, *via* the Belle Isle Straits, being 2,440 nautical miles, while that from Queenstown to New York is 2,777 miles.

No account of the Allan Company would be complete which failed to give due prominence to their connection with the vitally important subject of Canadian emigration, of which we shall have something more to say in a future paper. It is only since the period of Confederation that the provincial and central Governments have been at any trouble to encourage immigration by direct efforts, and all that was done up to that time was practically the work of the Allan Company and its agents. The Governments do not seem even yet fully awake to the importance of organised and persistent efforts in this matter. They send over a number of well-intentioned gentlemen who, for want of some concerted plan of action, are often getting in one another's way, and by so doing making it appear as if there were diverging interests between the provinces instead of one interest and aim common to the whole. All that could be done by private means the Messrs. Allan have accomplished. They have established in Great Britain and Ireland upwards of 1,000 agencies, every one of which is a centre of information about Canada. The voluminous pamphlets of the several Canadian provinces are disseminated by means of the Allan organisation, as they never could be in any other way. It may be truly said that this is to the interest of the Company. So it is; but it is none the less due to them to recognise their share in contributing to the growth of one of the most recent additions to the family of States, and certainly not one of the least ambitious. To those who are familiar with the emigration business, it is difficult to see how the Canadian Governments, without organizing for themselves such efficient machinery—which would have been a work of years, if it had ever been accomplished—as that presented to their hands by the Montreal Ocean Steamship Company, could pretend to battle with the numerous and acute agents bent upon getting all the Englishmen they can for the United States; and indeed the agents who have been sent over from Canada fully recognise this fact. In a Blue Book just published by the Government of Quebec, confirming the reports of various emigration agents for the last two or three years, the references to the value of the Messrs. Allan's work are numerous and eulogistic.

During the very warm, and often bitter steerage-passenger discussion of 1872, the Allan Company were able to vindicate their right to be considered as the leaders in arrangements for the comfort of steerage passengers, as they have been in regard to spar-decks, surface condensation, valve gear cylinders, and other matters. It was found that they alone, of all the lines, carried stewardesses for female steerage passengers, and

that they alone insisted upon an absolute and complete separation of the sexes, married as well as single. It is no impeachment of the other companies that they allotted to the married steerage passengers separate cabins, although this involved results which were much better avoided. The Allan Company had, and have, separate compartments for the females, and in the arrangements of the *Sarmatian* the isolation is so complete that it is impossible for any infraction of decorum to take place. In fact, the women are as much apart as if they were in a separate house. As the Allan Line has been selected by Miss Rye and other ladies to carry the children whom they take out in such numbers, special attention is paid to their comfort.

And now a few words in regard to the fuel required to keep this immense fleet of steamers in operation. The high price of coal in this country has necessarily turned the attention of the steamship owners to the business of obtaining this article of necessity from other quarters. It was a matter of course that the attention of Sir Hugh Allan, the Canadian partner of this Company, should not overlook the coal resources of the Dominion. Some time since property was acquired at Acadia, near Pictou, on the northern coast of Nova Scotia, which was known to contain coal. The Acadian Coal Company was formed by Sir Hugh Allan, and now the Allan Company maintain a steamer of 981 tons, called the *Acadian*, which is solely engaged in conveying the coal from this district to the various dépôts of the Company at Quebec and Portland. There is no doubt that the coal resources of this district are considerable. Several collieries are in working order, only requiring capital for their development.

A writer in the *Mercantile and Shipping Gazette* closes a recent well-considered article on the Allan Company, with the following well-timed tribute to its founder :—

“This seems to me the proper place for pointing out, from the enterprise of a man like Sir Hugh Allan, how the indisputable progress and prosperity of the Dominion of Canada are being achieved. Sir Hugh Allan has never been a politician. Although he has over and over again been solicited to enter Cabinets, and to represent his fellow-citizens either in the Dominion or the Provincial Parliament, he has devoted himself solely to commercial enterprises. His name is identified with nearly all the most successful commercial institutions in the Dominion. He is the President of the Canadian Pacific Railway ; President of the Merchants' Bank of Canada ; President of the Canadian Inland Navigation Company, one of the most important helps to Canadian trade ; President of the Montreal Telegraph Company, perhaps the most successful institution of the kind in the world ; President of the Northern Colonisation Railroad Company ; President of the Montreal Warehousing Company ; besides

being director of innumerable commercial associations. He was lately largely engaged in developing the copper resources of Nova Scotia; and, as if to give a most unique example of the comprehensive spirit of his enterprise, Sir Hugh Allan is owner of two steam vessels, called the *Greenland* and the *Lapland*, engaged in the seal fisheries. The Yankees pride themselves upon producing some famous business men, but it would puzzle them to beat such a record as this."

The Atlantic operations of the Allan Company, as at present constituted, embrace a weekly service from Liverpool to Portland, United States, a bi-weekly service from Liverpool to Quebec direct, with callings by the mail, or Thursday steamers, at Derry, and a fortnightly service, every alternate Tuesday, between Liverpool, Halifax, and Baltimore, calling at Queenstown for mails and passengers.

In regard to all these great steam lines, we would observe that such undertakings are fraught with consequences and results far removed in importance from their simply pecuniary results. To quote the words of a late writer, "they make States as much as they are made by them." The Messrs. Allan have not only succeeded in developing to its present proportions one of the most valuable trades between this kingdom and the most available and at the same time not least valuable of her Colonies, but they have contributed largely to people her broad acres with a hardy, industrious, homely population, and, in so doing, have greatly contributed to keep alive that feeling of patriotism and loyalty which now, more than ever, forms so gratifying a feature of colonial life. They have also done much to improve the build, both as regards safety and comfort of our ocean steam ships. Just compare the voyage to Halifax or Quebec, as now made in an Allan steamer, with the experience of 1840, or even 1850, when a collier brig, or, at best, a timber merchantman, was the only available means of transit. "Old things have passed away, and all things are become new." In place of time-honoured traditions, there is now prevailing another spirit of sea enterprise—such as we are seeking to pourtray in these papers; steamer-travel is now become so easy and cheap that men of business and of leisure traverse the ocean in quadruple the numbers they formerly did. Every change has its compensations, and if the ancient romantic excitements of the sea be in a great measure lost in the security and apparent ease of modern voyages, men will accept the change at least with resignation if not with thankfulness.

RULES OF THUMB FOR STEAMSHIPS NAVIGATING COASTWISE.

To the Editor of the "Nautical Magazine."

DEAR SIR,—In the *Nautical Magazine* for July, 1878, you published some "Rules of Thumb" for steamship speed, power, &c., which no doubt have proved of great service to many. It has often occurred to me that similar rules for steamships navigating coastwise might be useful. If you think so, I beg to offer for publication in your journal those which I have been in the habit of using myself when afloat, and which I have found useful when passing headlands, lights, &c., in the night, as it has enabled me to approximate their distances with tolerable correctness. Vessels have been lost from passing lights, and wrongly estimating their distances—to wit, the *Tyne*, from wrongly estimating her distance from Portland, just westward of St. Alban's Head, some seven or eight years ago. I do not profess that the rules are new, as, I dare say, some use them, or similar methods, to check themselves, but they may be useful to others who have not had much coasting experience.

RULE 1.—Every change of the course, amounting to 1 point, will lead 1 mile aside in a 5 miles run, or 2 in 10 miles, &c.

Example 1.—If I steer S.S.E. for 5 miles, and another vessel steers from the same position S.E. by S., 5 miles, we shall be 1 mile apart at the end of the 5 miles run, or two miles apart at the end of a 10 miles run, &c.

This is useful in steering across a tide. Thus—

Example 2.—If I want to reach from A to B, the bearing of B from A being S.S.E., and the distance 20 miles, with a tide running E.N.E. 2 miles per hour, and I am going at the rate of 10 miles per hour, I should have to steer 1 point to starboard—viz., S. by E. from A to arrive at B, as I should be 2 hours going the 20 miles, and in that time the tide would take me 4 miles to port, therefore, one $\frac{4}{5}$ = $\frac{1}{5}$, or 1 in 5 would be the allowance to make.

This rule may be summarised thus—

Allow 1 mile, in every 5 miles run, for one point of the compass different in course.

This rule may also be applied *in passing* a headland, or light in the night time, to find your distance from it. Thus—

Example 3.—On passing a light, going at the rate of 8 miles per hour, and the tide with us going at the rate of 2 miles per hour, I find it changes its bearing 1 point in 6 minutes, what is my distance from it?

$8 + 2 = 10$ miles, the rate we are going *over the ground*, and 6 minutes run at 10 miles per hour = 1 mile, which $\times 5 = 5$ miles distance from the light. As there is nearly always an error of observation amounting to $\frac{1}{4}$ of a point with some persons, the larger the angle or change of bearings, the less proportion of error remains therefore.

RULE 2.—Change the bearings $2\frac{1}{2}$ points (noting the times, to get the distance run in the interval), then doubling the distance run, will give the distance from the light.

N.B.—Rules 1 and 2 are most accurate when the middle bearing, *half-way* between the two taken, is *abeam*; but a little variation of a point or two will not materially alter the result.

Example.—Steering up Channel E. by S., I observed the *Start Light* bearing N.N.E. $\frac{1}{4}$ E. at 9.0 p.m., we were going 10 knots, and the tide was going with us 2 knots, and at 9.20 the light bore N. $\frac{1}{4}$ W.; required my distance from the light.

20 minutes run at $10 + 2 = 12$ knots per hour = 4 knots, which doubled = 8 knots my distance from the light.

N.B.—This distance will be accurate for the middle bearing *halfway* between the two—viz., N. by E.; but from N. $\frac{1}{4}$ W. there would be an error of about $\frac{1}{3}$ of a mile, which would not be important in such a case, and would be more truthful than a mere guess.

RULE 3.—Double the angle between the course and the 1st bearing of the light, and the distance run will be equal to the distance from the light at the position where the second bearing was taken.

Example 1.—Steering N.N.W. I observed *Cromer Light* bearing W.N.W. (on 4 points off the course) at 10 p.m.; we were steaming at the rate of 10 miles per hour *through the water*, and the tide was running to the S.S.E. at 2 miles per hour. At 10.45 I observed the light *abeam* (or 8 points off the course, having doubled it from 4 points) bearing W.S.W.; required my distance from the light at the 2nd position.

$10 - 2 = 8$ miles the rate we were *going over the ground*, and for 45 minutes run = 6 miles made good, which will be our distance from the light at the second position.

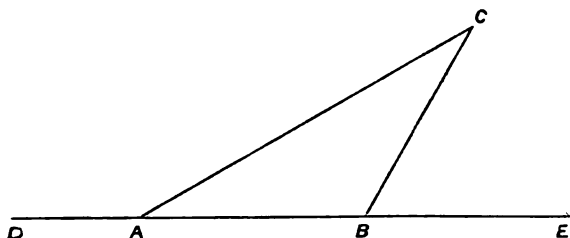
N.B.—This is a good example for finding the distance of a light when *abeam*, by taking the first bearing when it is 4 points off the course, and the second when it is 8 points off, or *abeam*.

Example 2.—Steering N.N.W. I observed *Cromer Light* when it bore N.W. $\frac{1}{2}$ W. (or $2\frac{1}{2}$ points off the course) at 9.20 p.m.; we were steaming at the rate of 10 miles per hour *through the water*, and the tide was running to the S.S.E. at 2 miles per hour. At 10.12 p.m. it bore W. by N. (or 5 points off the course, having doubled it from $2\frac{1}{2}$ points); required my distance from the light at the 2nd position.

$10 - 2 = 8$ hours, the rate we were going *over the ground*, and for 52 minutes run = 7 miles (nearly) made good, which will be the distance required from the lighthouse at the 2nd position.

This is useful when coming in from sea ; say you make a light nearly ahead, and you require to ascertain your distance from it, keep her off from it any convenient number of points, say $2\frac{1}{2}$, and when it has doubled, that is, when there are 5 points between the course and the bearing of the light, the distance run in the interval will be your distance from the lighthouse at the second position.

The proof of this is Rule 8, Euclid's Prop. 32a, Book 1.



In the Figure A is the ship's 1st position.

„ B „ 2nd „

„ C Light.

„ D E the line of ship's course.

And the outward angle C B E of 5 points = both the inward and opposite angles C A B and A C B, but as the angle C A B is $2\frac{1}{2}$ points, the angle A C B will also be $2\frac{1}{2}$ points ; they are, therefore, equal. The sides opposite these equal angles are also equal. $AB = BC$ (Euclid, Prop. 6, Book 1) and A B is the distance run, and B C the distance from the light to the 2nd position.

In the last Blue Book relating to lighthouses, &c., among the scientific questions is one (if I recollect right) to ascertain the distance from a lighthouse in the night time, when passing or approaching it, but I saw no practical answer given. I think this Rule I have given is easy enough for anyone to use.

T. E.

Yarmouth, May 17th, 1875.

SIR WILLIAM THOMSON ON DEEP-SEA SOUNDINGS BY PIANOFORTE WIRE.

(COMMUNICATED BY THE AUTHOR.)



N the 29th of June, 1872, I sounded, from the *Lalla Rookh*, schooner-yacht, in the Bay of Biscay, with a lead weight of 80 lbs., hung by 19 fathoms of cod-line from another lead weight of 4 lbs. attached to one end of a three-mile coil, made up of lengths of pianoforte wire spliced together and wound on a light wheel, about a fathom in circumference, made of tinned iron plate. The weight was allowed to run directly from the sounding-wheel into the sea, and a resistance exceeding the weight in water of the length of the wire actually submerged at each instant was applied tangentially to the circumference of the wheel, by the friction of a cord wound round a groove in the circumference, and kept suitably tightened by a weight. My position at the time was considerably nearer the north coast of Spain than a point where the chart shows a depth of 2,600 fathoms, the greatest depth previously marked on the charts of the Bay of Biscay. When from 2,000 fathoms to 2,500 fathoms were running off the wheel, I began to have some misgivings as to the accuracy of my estimations of weights and application of resistance to the sounding-wheel. But, after a minute or two more, during which I was feeling more and more anxious, the wheel suddenly stopped revolving, as I had expected it to do a good deal sooner. The impression on the men engaged was that something had broken; and nobody on board except myself had, I believe, the slightest faith that the bottom had been reached. The wire was then hauled up by four or five men pulling on an endless rope round a groove on one side of the wheel's circumference. After about 1,000 fathoms of wire had been got in, the wheel began to show signs of distress. I then perceived, for the first time (and I felt much ashamed that I had not perceived it sooner), that every turn of wire under a pull of 50 lbs. must press the wheel on the two sides of any diameter with opposing forces of 100 lbs., and that, therefore, 2,240 turns, with an average pull on the wire of 50 lbs., must press the wheel together with a force of 100 tons, or else something must give way. In fact the wheel did give way, and its yielding went on to such an extent that when 500 fathoms of wire were still out, the endless cord which had been used for hauling would no longer work on its groove. The remaining 500 fathoms and the 80 lbs. sinker were got in with great difficulty, by one man working at a time in an awkward position over the vessel's side, turning the wheel slowly round by a handle. I was in the greatest anxiety, expecting at every moment to see the wheel get so badly out of shape that it would

be impossible to carry it round in its frame, and I half expected to see it collapse altogether and cause a break of the wire. Neither accident happened, and, to our great relief, the end of the wire came above water, when instantly the 19 fathoms of cod-line were taken in hand, and the 30 lb. sinker hauled on board. I scarcely think anyone but myself believed the bottom had been reached, until the brass tube with valve was unscrewed from the sinker and showed an abundant specimen of soft grey ooze. The length of wire and cod-line which had been paid out was within a few fathoms of being exactly 2,700 fathoms. The wire was so nearly vertical that the whole length of line out cannot have exceeded the true depth by more than a few fathoms. The position was accurately determined by two Sumner lines observed at 11h. 23m. a.m. and 1h. 5m. p.m. Greenwich apparent time, and found by their intersection to be latitude $44^{\circ} 32'$, longitude $5^{\circ} 43'$ west.

That one trial was quite enough to show that the difficulties which had seemed to make the idea of sounding by wire a mere impracticable piece of theory have been altogether got over.

The great merit of wire compared with rope is the smallness of the area, and the smoothness of the surface which the wire presents, in contrast with the greatness of the surface and its roughness, when rope with a comparable degree of strength is used. The wire that I have found suitable is pianoforte wire of the Birmingham gauge No 22. It weighs about $14\frac{1}{2}$ lbs. to one nautical mile, and bears from 230 lbs. to 240 lbs. without breaking. The quality of wire which I described to the meeting of the British Association, at Brighton, was special wire made for the purpose by Messrs. Johnson, the celebrated wire-makers, of Manchester. They succeeded in producing a length of crucible steel wire of three miles in one piece, which certainly was a great feat in the way of wire-making. This wire was supplied by them to me as capable of bearing a pull of about 230 lbs. I tested many specimens of it, and I found that none of them broke with a less pull than about 220 lbs., and many of them bore as much as 240 lbs. The wire then fulfilled all that the makers promised, and it had that quality which then seemed of paramount importance—a great length in one piece of metal. The truth is, that one of the supposed “impossibilities” was safe splices. However, splices must be made; and in my first trials I succeeded by making a long twist of two pieces of wire together, and running solder all along the interstices. On testing this splice, I found that, although it would bear within 10 lbs. or 20 lbs. of the full breaking-weight of the wire, yet in every case the wire broke at the splice. This was precisely in accordance with theory. The sudden change of area of section between the long cylindrical wire, and the thickening produced by the solder, is an essential element of weakness, of a character well known to

engineers. Inevitably, if the wire is of uniform character, it breaks close beside the solder. To avoid this weakening of the wire, an exceedingly gradual commencement of the force by which one piece of wire pulls the other must be attained. The obvious way of attaining this is by a very long splice. A splice of two feet long I have found quite sufficient; but three feet may be safer. The two pieces of wire to be spliced, are first prepared by warming them slightly and melting on a coating of marine glue to promote surface friction. About three feet of the ends so prepared are laid together and held between the finger and thumb at the middle of the portions thus overlapping. Then the free foot and a half of wire on one side is bent close along the other in a long spiral, with a lay of about one turn per inch, and the same is done for the free foot and a half on the other side. The ends are then served round firmly with twine, and the splice is complete. I have tested scores of splices made in this way, and in no one instance, even with splices only one foot long, did the wire break in the splice or near to it. It always broke some distance away, showing that the wire close to the splice was as strong as other parts of the wire, and of course in the splice itself the two wires together give a greater strength than exists anywhere else. In upwards of one hundred soundings on the East and North coasts of Brazil, in the Pacific, and in the Bay of Biscay, in depths off from 500 to 2,700 fathoms, partly with Johnson's special wire, and partly with Webster and Horsfall's, there has in no one instance been a failure of the splice. The splice is made very easily, and in a few minutes.

The difficulty with regard to splices being altogether got over, we are freer in our choice of the wire to be used. Mr. Johnson tells me that it is impossible to produce in the great lengths the same quality of wire as is habitually made by the best makers of pianoforte wire. He said that, although he could produce wire of great strength, he found it impossible to attain the same temper as that of the pianoforte wire. Acting upon his valuable advice, I have now begun to use pianoforte wire of the best quality. Wire of an inferior quality is brittle at places, and breaks like pack-thread when it kinks. I believe not a single case of this has happened with the Webster and Horsfall pianoforte wire now used.

The lengths which Webster and Horsfall supply of this wire are about 200 yards, but a splice in every hundred fathoms is no inconvenience whatever. Perhaps it is rather an advantage: because, practically the vigilance required to prevent accident through the stripping of a splice by any sharp obstacle is apt to flag dangerously if the passage of a splice is a rare occurrence.

The most serious defect of the simple apparatus which I used in my first deep-sea sounding in the Bay of Biscay was the destructive stress experienced by the wheel in hauling in the wire.

My first attempt to remedy this defect was a failure. It consisted in stopping the hauling every twenty turns, taking the strain off the wire by aid of a clamp, and easing it round the wheel. This was done in a sounding of 1,200 fathoms, made in Funchal Bay, Madeira, only a few miles from Funchal, during the *Hooper* cable expedition to Brazil last summer. I found that stopping every twenty turns did not seem to be of any use at all, so I stopped every ten turns, and even that tedious process did not afford sufficient relief. That plan having proved a failure, I then looked out for some other; and the peculiarity of the apparatus now before you consists in the way in which the difficulty was overcome. In the American Navy another mode of getting over it has been followed: the wheel has been strengthened, and a trigger apparatus has been introduced for detaching the weight when it reaches the bottom. This of course very much lightens the pull in hauling in the wire. By those means—the strengthening of the wheel and the lightening of the pull—the Americans got over the difficulty very well. I, however, did not consider it desirable to throw away 80lbs. or 85lbs. of lead at every sounding, as I believed I could modify the apparatus so as to make it easy to bring up the sinker from any depth not exceeding 3,000 or 3,500 fathoms in ordinarily favourable circumstances; and I wished to reserve the expedient of detaching the weight for greater depths or less favourable circumstances. In case of very great depths, 4,000 fathoms or more, it will probably be desirable to use a heavier sinker, say 100 lbs., and a trigger apparatus for detaching it when it reaches the bottom. But for depths not exceeding 3,000 fathoms, I prefer generally a 30 lb. or 85lb. sinker, with no detaching apparatus.

The way in which I have got over the difficulty of saving the main sounding wheel from destruction or damage by the pressure of the wire coiled on it, under heavy pull, consists in the use of an auxiliary hauling-in pulley by which the pull on the wire is very much reduced before it is coiled on the main sounding wheel. As in my original process in the Bay of Biscay, during the descent of the sinker the wire runs direct down into the sea from the main sounding wheel, which, for that part of the process, is placed in an overhanging position on either side of the ship, or over her taffrail; the taffrail, suppose, to avoid circumlocutions. To prepare for hauling in, a spun yard stopper, attached to the lower framing of the sounding machine projecting over the taffrail, or to the taffrail itself, is applied to the wire hanging down below, to hold the wire up and relieve the wheel from the necessity of performing that duty: or otherwise, two men, with thick leather gloves, can easily hold the wire up.* A little of the wire is then paid out from the wheel; the wheel with its framing

* The spun yarn stopper is to be seen in the accompanying perspective drawing, shown as hanging ready for use.

is run inboard about five feet on slides which carry its framing [see the accompanying drawings*]; and the slack wire, as shown in the perspective view, is led over a quarter circumference of the "castor pulley," and three-quarters or once and three-quarters, round the "auxiliary pulley." This pulley overhangs the bearings of its own axle, so as to allow the loop or the two loops of the wire to be laid on it. Two handles attached to the shaft of the auxiliary pulley, worked by one man on each or two men on each, take from two-thirds to nine-tenths of the strain off the wire before it reaches the main sounding wheel, on which it is coiled by one man or two men working on handles attached to its shaft.

If the ship is hove to when the wire is being hauled in, the wire will generally stream to one side (if out by the stern, which is the position I now prefer). By having the bearings of the stern pulley, an oblique fork turning round a horizontal axis (like the *castor* of a piece of furniture laid on its side), the wire is hauled in with ease though streaming to either side, at any angle. [See the drawings.†] This castor arrangement is a very important addition to the hauling-in gear. By means of it it is easy to keep the wire on the stern pulley when the ship is rolling very heavily. Even on the steam launch of the *Hooper* rolling sharply through great angles off Funchal Bay, a small castor pulley which I used accommodated itself perfectly to the motion, and allowed the wire to be coiled safely on the sounding wheel, which would have been scarcely possible without the aid of some such appliance. The quickness with which the wire allows the sinker to descend, and the ease of getting it on board again by aid of the castor pulley, notwithstanding a considerable degree of lateral drifting of the ship, render it easy to take deep-sea soundings of 2,000 or 3,000 fathoms, from a sailing vessel hove to in moderate weather.

But it is not necessary to keep the ship hove to during the whole time of hauling in the wire. When the depth exceeds 3,000 fathoms, it will, no doubt, be generally found convenient to keep the ship hove to until a few hundred fathoms of the wire have been brought on board. When the length out does not exceed 2,500 fathoms, the ship may be driven

* The side elevation shows the sounding wheel projecting over the taffrail in the position for paying out the wire: and the perspective drawing shows it as run inboard in the position for hauling up.

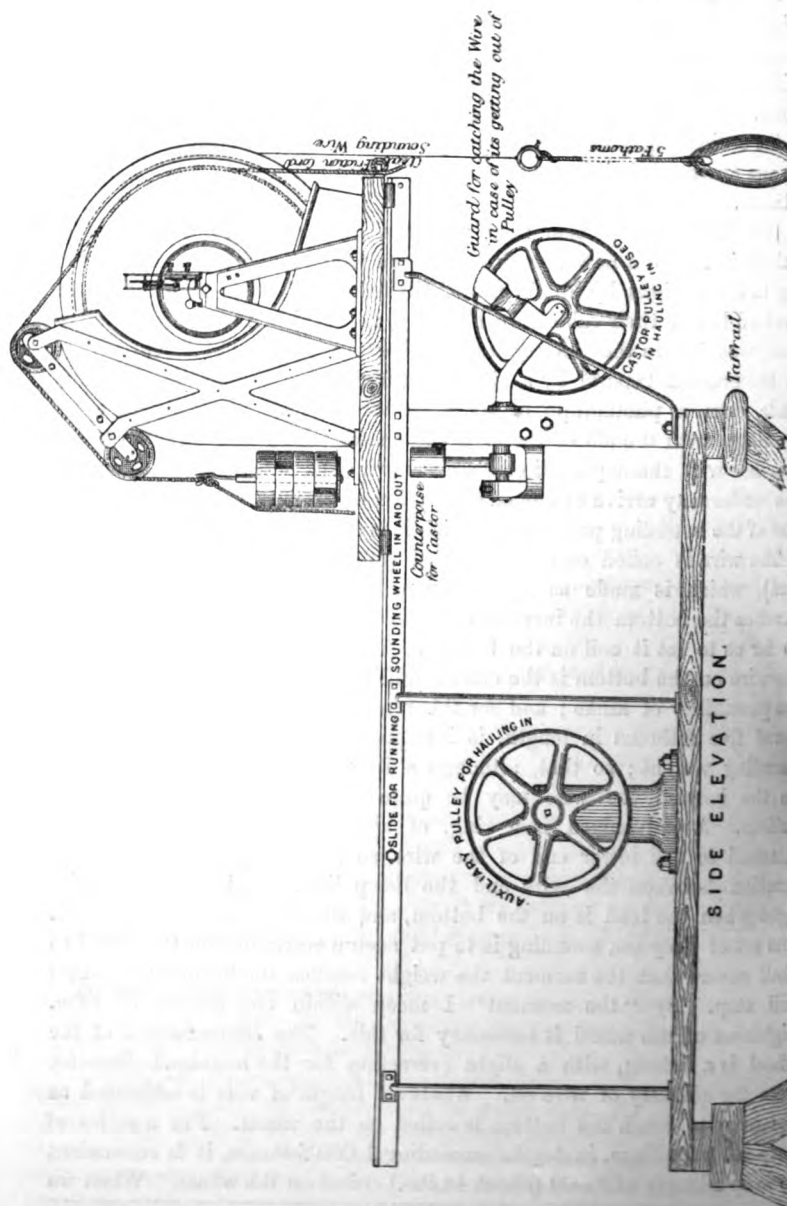
† In respect to the arrangement of framing for bearing the castor axle of the forked piece in which the castor wheel or pulley runs, the side elevation shows a design of improvement on the arrangement represented in the perspective drawing. The improvement consists merely in lengthening the castor axle, and providing for it two bearings, instead of its only having one, as was the case in the machine shown at the meeting, and as is exhibited in the perspective from a photograph of which the annexed drawing was taken.

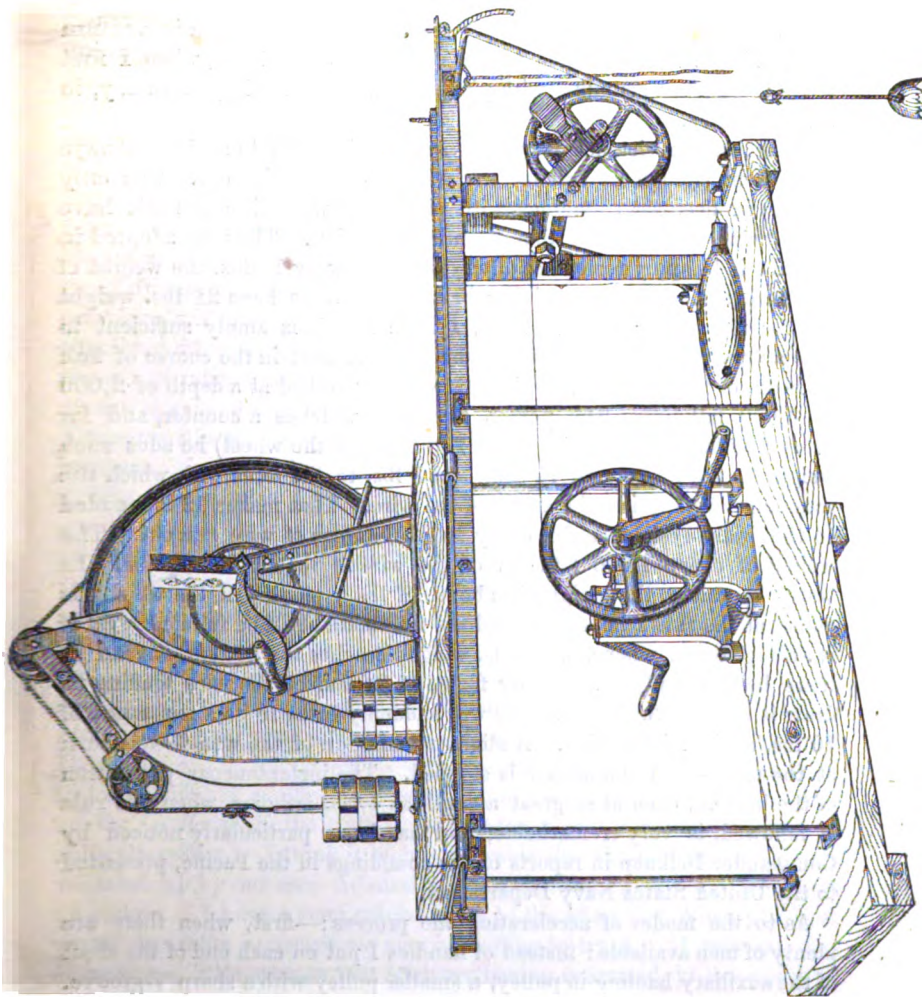
ahead slowly, with gradually increasing speed. When the length of wire out does not exceed 1,500 fathoms, the ship may be safely driven ahead at five or six knots. The last 500 fathoms may be got on board, with ease and safety, though the ship is going ahead at ten or twelve knots. Thus, by the use of wire, a great saving of time is effected; for in the ordinary process the hemp rope must be kept as nearly as possible up and down, until the whole length out does not exceed a few hundred fathoms.

[Sir William Thomson next proceeded to explain in detail and to exhibit in action a new sounding machine which had been made according to his designs by Mr. White of Glasgow for Messrs Siemens, to be used on board their cable ship *Faraday*, and which, through their kindness, was before the Society this evening. The machine is represented in the present report* by a side elevation and a perspective drawing made from a photograph of the apparatus itself. By study of these drawings, with the aid of the brief explanatory notes written upon them, together with the explanations here following, as noted from the lecture, the reader may arrive at a good conception of the nature of the apparatus, and of the sounding process for which it is adapted.]

The wire is coiled on a large wheel (of very thin sheet iron galvanised), which is made as light as possible, so that when the weight reaches the bottom the inertia of the wheel may not shoot the wire out so far as to let it coil on the bottom. The avoidance of such coiling of the wire on the bottom is the chief condition requisite to provide against the possibility of kinks; and for this reason a short piece of hemp line, about five fathoms in length, is interposed between the wire and the sounding weight; so that, although a little of the hemp line may coil on the bottom, the wire may be quite prevented from reaching the bottom. A galvanized iron ring, of about half a pound weight, is attached to the lower end of the wire, so as to form the coupling or junction between the wire and the hemp line, and to keep the wire tight when the lead is on the bottom, and the hemp line is slackened. The art of deep-sea sounding is to put such a resistance on the wheel as shall secure that the moment the weight reaches the bottom the wheel will stop. By "the moment" I mean within one second of time. Lightness of the wheel is necessary for this. The circumference of the wheel is a fathom, with a slight correction for the increased diameter from the quantity of wire on. Whatever length of wire is estimated as necessary to reach the bottom is coiled on the wheel. For a series of deep-sea soundings, in depths exceeding 1,000 fathoms, it is convenient to keep a length of 3,000 (about 43 lbs.) coiled on the wheel. When we

* More detailed drawings are published in the Proceedings of the Philosophical Society of Glasgow for session 1873-4.





do not get bottom with 3,000 fathoms, the process of splicing on a new length of wire ready coiled on a second wheel, is done in a very short time—two minutes at most. The friction brake which you see is simpler in construction than that shown to the Institution of Engineers in Scotland last session, and sent out a year ago to the American Navy Department. The brake on the sounding machine now before you is a return to the simple form of brake which I used in June, 1872, when I first made a deep-sea sounding with pianoforte wire in the Bay of Biscay, in 2,700 fathoms.

A measured resistance is applied systematically to the wheel, always more than enough to balance the weight of the wire out. The only failures in deep-sea soundings with pianoforte wire hitherto made have been owing to neglect of this essential condition. The rule adopted in practice is to apply resistance always exceeding by 10 lbs. the weight of the wire out. Then, the sinker being 34 lbs., we have 24 lbs. weight left for the moving force. That, I have found, is amply sufficient to give a very rapid descent—a descent so rapid that in the course of half an hour, or fifty minutes, the bottom will be reached at a depth of 2,000 or 3,000 fathoms. The person in charge watches a counter, and for every 250 fathoms (that is, every 250 turns of the wheel) he adds such weight to the brake-cord as shall add 8 lbs. to the force with which the sounding-wheel resists the egress of the wire. That makes 12 lbs. added to the brake-resistance for every 1,000 fathoms of wire run out. The weight of every 1,000 fathoms of the wire in the air is $14\frac{1}{2}$ lbs. In water, therefore, the weight is about 12 lbs.; so that if the weight is added at the rate I have indicated the rule stated will be fulfilled. So it is arranged that when the 34 lbs. weight reaches the bottom, instead of there being a pull, or a moving force, of 24 lbs. on the wire tending to draw it through the water, there will suddenly come to be a resistance of 10 lbs. against its motion. A slight running on of the wheel—one turn at the most—and the motion is stopped. The instantaneous perception of the bottom, even at so great a depth as 4,000 fathoms, when this rule is followed, is very remarkable, and has been particularly noticed by Commander Belknap in reports of his soundings in the Pacific, presented to the United States Navy Department.

As to the modes of accelerating the process:—first, when there are plenty of men available: instead of handles I put on each end of the shaft of the auxiliary hauling-in pulley, a smaller pulley with a sharp V-groove. An endless rope passed half round each of these V-pulleys, and kept tight by a snatch block suitably placed inboard, allows any number of men to haul, hand over hand, or walking along the deck, as may be found most convenient. Or when there is a donkey-engine, it may be employed on one of the endless ropes, instead of a multitude of men on the two.

By multiplying the speed of men, or using a donkey-engine in that way, there is no difficulty in hauling in the wire at the rate of about eight nautical miles an hour. Thus the last 1,000 fathoms of wire, with 34 lbs. sinker attached, may in any case be easily and safely got on board in seven or eight minutes; but a dozen men hauling together might be required for this speed. When greater lengths of wire are out, slower speeds of hauling are required for safety. With 3,000 fathoms of wire out, probably an average speed of four miles per hour (or 400 feet per minute) would not give more than from 100 to 120 lbs. whole pull on the in-coming part of the wire (or from 30 to 50 lbs. resistance of the water, added to 34 lbs. weight of sinker and 36 lbs. weight in water of the wire); and would, therefore, be a safe enough speed. Of course, if there is a heavy sea, augmenting considerably the maximum stress above the mean stress, then slower hauling must be practised. An arrangement by Professor Jenkin can very readily be applied, by which the men or engine can haul in as fast as they please, and be unable to put more than a certain force on the wire. Thus will be realised in speed the benefit of abundance of power. The wire will come in fast when the strain is easy, and not come in at all when the ship is rising and producing such a pull on the wire as might break it if being hauled in at the moment.

The advantages of the pianoforte-wire method are very obvious. You see the simplicity of the apparatus, and the comparative inexpensiveness of it; no donkey-engine required, no three or four hundred pounds of iron cast away every time, as in the ordinary method of deep sea soundings: and withal there is a very much surer sounding than the ordinary process can give at the same depths. The apparatus at present in use in our Navy, which is better than that of any other navy in the world at this moment, except the American, is as I know by actual experience of it, more difficult and tedious, and less sure at 500 fathoms, than sounding by the pianoforte wire at 2,000 fathoms. And, lastly, there is the possibility of effecting a sounding in cases in which, as in the case of the *Challenger* in the Gulf stream, the most matured previous process fails altogether. I think it highly desirable that the new method should be taken up by our own Admiralty. But innovation is very distasteful to sailors. I have a semi-official letter to the effect,—“When you have your apparatus perfected we may be willing to try it.” I may say that it seems a little strange that after my having intimated, in the month of July, 1872, the perfect success of pianoforte wire for sounding in depths of 2,700 fathoms, the *Challenger* was allowed to go to sea without taking advantage of this process, and that a year and a half later I should be told,—“When you have perfected your instrument we may give it a trial.” The American Navy Department looked upon the matter with

different eyes, and certainly treated my proposal in a very different spirit. They found my apparatus full of defects. They never asked me to perfect it, but they perfected it in their own way, and obtained excellent results. I went on independently in another line, and made a considerably different apparatus from that which is now being used by the Americans; but I certainly was very much struck by the great zeal and the great ability which the American naval officers showed in taking up a thing of this description, which had merely been proved to be good, and charged themselves with improving the details and making it a workable process.

If I may be allowed two or three minutes longer, I will describe the method of making flying-soundings with wire. In the first *Hooper* expedition, to lay the first section of the Western and Brazilian Company's cable from Pernambuco to Para, the Brazilian Government sent the gun-boat *Paraense* with us to take soundings, but the coal would not carry her the whole way, and over the remainder of it we were left to our own resources for soundings. Wire soundings had been taken over the route previously by Mr. Galloway, in a steamer chartered for the purpose by the Western and Brazilian Telegraph Company, and again in the *Paraense*, so as to give a general idea of the line to be taken for the cable; but still it was very important that soundings should be taken during the actual laying. Accordingly, Captain Edington arranged that my sounding-wheel should be set up over the stern of the *Hooper*, and soundings were taken every two hours, without stopping the ship. A 80 lbs. weight was hung by a couple of fathoms of cord from the ring at the end of the wire. Then the wheel was simply let go, with a resistance of about 6 lbs. on its circumference, the ship running at the rate of $4\frac{1}{2}$ knots, relatively to the surface-water (or at 6 knots relatively to the bottom); and after, perhaps, 150 fathoms had run out—in some cases 175 fathoms—suddenly the wheel would almost stop revolving. In half a turn it was obvious that there was this sudden difference, which showed that the sinker had reached the bottom. The moment the difference was perceived, the man standing by laid hold of the rim of the wheel and stopped it. Thus we achieved flying-soundings in depths of 150 fathoms, with the ship going through the water at the rate of $4\frac{1}{2}$ knots, and obtained information of the greatest possible value with reference to the depth of the water and the course to be followed by the cable. I think this is of such great importance that I never would like to go to lay a cable without an apparatus for flying-soundings. The warning that this practice gives of shallow water, or of too great a depth of water, has a value which the members of the Society of Telegraph Engineers will readily appreciate. It will also, no doubt, be found useful in ordinary navigation. There is one interesting topic to which I may refer, in conclusion, and that is the sound continually produced by the wire. All the

well known to chemists. It seemed to be due to the alkali neutralizing time we are employing pianoforte wire in this way we have "sounding" in a double sense. During the whole process of sounding, we are continually reminded of the original purpose of the wire by the sounds it gives out. A person of a musical ear can tell within a few pounds what pull is on the wire by the note it sounds in the length between the castor-pulley at the stern, and the haul-in drum which is about five feet inboard of it.

At the discussion of the foregoing paper at the Society of Telegraph Engineers, Mr. Froude said that he had the pleasure of seeing the first specimen of sounding-wire which Sir William Thomson had made before it was used. He forgot whether at that time Sir William Thomson had hit upon his extremely ingenious and nice mode of taking the strain off the wheel; but one could see at once that it was perfectly easy and must succeed. The idea of making a strong joining in the wire by a long succession of weak fastenings seemed a very instructive mode of getting over a serious difficulty. He saw from the beginning that the points might be put together by solder, but it was obvious to him that the stiffening of the wire by the solder must have a bad effect. He thought that it was much to be regretted that the Admiralty did not at once take up Sir William Thomson's process. They were much more disposed to take up such things than they used to be; and he was rather surprised, knowing how high Sir William Thomson's authority stood, that they should have any hesitation in taking up the process. He (Mr. Froude) wished to ask how the difficulty of corrosion by salt-water was ultimately overcome. The use of oil had been under discussion.

Sir William Thomson said that there were two methods of guarding against rust. The Americans used oil, submerging the wheel in oil when it was out of use. Commander Belknap having carried out the process of wire-sounding with remarkable success, he (Sir William) supposed that the Americans were satisfied with the preserving power of the oil thus used. On board the *Hooper* the deep-sea sounding-wire was preserved by caustic soda when out of use.* That substance, when bought wholesale, was so inexpensive that the cost of that mode of keeping the wire from corrosion was not worth speaking of. There was, however, a good deal of trouble connected with it; but it must be remembered that that trouble would not be much regarded on board a ship appointed especially for making soundings. The preserving effect of alkali upon steel was

* Note added May, 1875.—The result of subsequent experience in cable ships, and in two ships of the British Navy, *Druid* and *Dryad*, has led to the discarding of caustic and the use of oil, according to the American example, in preserving the wire. Commander Belknap had made very deep sea soundings during several months with the same wire, and without losing a fathom of it; and had found the use of oil sufficient to preserve it perfectly.

the carbonic acid in the water, for the presence of carbonic acid in water was the great cause of iron being corroded. The fact was well established that iron would remain perfectly bright in sea-water rendered alkaline by a little quick-lime. Caustic soda was a more sure material, because with it we could make more certain that the water was really alkaline. He was told by a very excellent authority, Mr. James Young, that, whether caustic soda or quick-lime was used, all that was necessary, in order to make sure that the pickle would be a thorough preserver of the wire, was that it should be found to be alkaline when tested with the ordinary litmus test-paper. The American experience was, that although the caustic soda preserved the wire, it ate away the solder, and on that account they preferred to use oil.

Mr. Matthew Gray : I do not know that I can add to the information which Sir William Thomson has given ; but about sixteen months ago I laid a cable across the Gulf of Lyons, and, having heard what had been done by Sir William Thomson, I had an apparatus made very much like this. In going to sea with it we found no difficulty in taking soundings in 1,300 fathoms. I was, however, not so fortunate as Sir William was in getting good wire of sufficient strength to pull up the weight, and the wire was broken three or four times. At last we constructed a weight which got left at the bottom when it touched the bottom, and with that we were pretty successful. We used oil for keeping the wire from rusting. The oil was kept in a trough, and a flat india-rubber bearing rubbed against the wire to rub off the superfluous oil and kept it from flying over the deck. That seemed to answer the purpose very well. I may mention that I also had an apparatus with a view to picking up a larger portion of the bottom than is usually done. It was shaped something like a sugar-tongs, but the jaws were not fitted with sufficient accuracy, and the water washed out the material which the tongs took up. I have no doubt that in all cable laying in the future much will be done with the apparatus which Sir William Thomson has constructed.

Captain Hall : From the way in which Sir William Thomson has explained this process, if I were sent out to make deep-sea soundings I should apply to have my ship fitted with this apparatus. There are many things pointed out to-night which I should like to try for myself, because it is different on the table here to what it would be on the deck of a ship. I think some modification might be made in the mode of taking flying soundings by the use of an old-fashioned implement used by sailors, which consists of a pulley connected with a little canvass bag, which, in the case of the *Hooper*, would indicate when the bottom was reached by bobbing up and down in the way that a float does in ordinary angling. I would repeat, if I were required to make deep-sea soundings, I should apply to be provided with Sir William Thomson's apparatus.

Mr. Matthew Gray: May I ask Sir William Thomson to be good enough to explain how it happened that the pulley was so much injured by the weight of the wire? Probably my pulley might have been somewhat stronger than this. I should be glad to know whether Sir William brought anything up from the bottom and how he did it?

Mr. Latimer Clarke: In what way is the friction strain on the wheel regulated and adjusted? I should also be glad to hear whether in the flying soundings the sinker is recovered?

Professor C. Maxwell asked whether cross-filing of the wires at a splice for increasing the grip did so much harm by weakening the wires as to counterbalance the advantage of the increased hold?

Sir W. Thomson, in reply to the questions that had been put, said: With reference to the question that has just been put by Professor Clerk Maxwell, I should say that cross-filing to prevent slipping would injure a wire by diminishing its strength, more than would compensate for the advantage in increasing the friction; and marine glue is found to answer so well that I do not think any process of roughening the wire is necessary. I have been asked to explain how the resistance is applied on this apparatus. I will state in the first place that this form of break was patented by me in 1858, and I have used it myself ever since.

Demonstrating the use of the brake, Professor Thomson remarked: The rate of change of pull in the cord per radian* round the wheel is equal to the amount of the pull at any point, multiplied by the co-efficient of friction. The whole tangential resistance which the cord applies to the circumference of the wheel is equal to the excess of pull at one end above that at the other end of the cord. I have been asked by Mr. Latimer Clarke whether I recover the sinker in flying soundings. Always; I never lose a pound of lead if I can help it. In the use of the "deep-sea lead" of ordinary navigation, six men have a heavy haul to bring up a lead in soundings of 50 or 60 fathoms, if the ship is under way; but by the wire process a cabin boy can bring a 94 lbs. sinker with ease from a depth of 150 fathoms, the ship all the time going on her course, at from four or five knots (to which the speed may have been reduced for a couple of minutes for the sounding) up to full speed.

An important merit of wire for deep-sea sounding is the setting of the ship in motion again, which it permits almost as soon as the bottom is reached. Suppose the depth found 3,000 fathoms: by the time you have got about 500 fathoms of wire in, you steam slightly ahead; when 1,500 fathoms is in, you may steam at five or six knots without injury;

* "Radian" is a word, introduced by Professor James Thomson to denote the angle whose arc is equal to radius. It is the hitherto nameless "unit angle" of the Cambridge and other mathematical books.

and by the time you have only about 1,000 fathoms out, you may steam at 10 knots ; and, if the speed of the ship is equal to it, you may steam at 12 knots with 700 or 800 fathoms of line out. In fact, the time spent in deep-sea soundings will be reduced to a small fraction of what it is by the process of our own Admiralty. Mr. Siemens has asked, how quickly a sounding of 2,000 fathoms can be made. The wire, with 34 lbs. sinker, would take not more than 30 minutes to run out ; but, if for a *tour de force* you wished to do it quicker than that, I should use a much greater weight—say, 150 lbs., with detaching trigger. Supposing, however, the 34 lbs. sinker to be used, with the multiplying speed on the pulleys, and twelve or fourteen men hauling on the endless rope, it might be hauled from a depth of two miles in about 15 minutes. Thus the whole process, with the recovery of the sinker, would be performed in 45 minutes. The process without recovery of the 150 lbs. sinker may be made with only about 20 minutes detention when the object is to make a sounding with the least possible detention, and, therefore, the ship is allowed to go on her course at fair speed during the time of hauling in the line, with tube and specimen of bottom. A sounding of 1,000 or 1,500 fathoms, with recovery of the 34 lbs. sinker, may be executed with only the detention of stopping the ship, keeping her stopped for a quarter of an hour or twenty minutes while the lead is going down, and then going a-head full speed as soon as it has struck the bottom.

A question has been asked with reference to flying soundings, as to the allowance to be made for the non-verticality of the wire. I have indicated that these are only approximate soundings, but they are sufficiently near for many practical purposes, and a little experience gives data for making allowances with considerable accuracy. [This was demonstrated by a diagram on the board.*] With the aid of a little experience of what the wire really does in moving through the water in flying soundings, you may obtain very close results. In the *Hooper*, I believe, the flying soundings in from 170 to 40 fathoms were ascertained within from 10 to 5 per cent.

I hope my friend, Mr. Froude, may be induced to take up the subject of the resistance of the water against steel wire. He has apparatus at Torquay by which he measures the resistances experienced by models of ships, which I think might also be applied to the measuring of resistances experienced by wire, and from that some valuable results might be obtained. I have found the resistance in towing, at seven or eight knots, 1,500 fathoms of pianoforte wire, with ring, short hemp line, and 30 lbs. sinker at the end, is quite manageable.

* This demonstration is given in a note on "Flying Soundings" appended to the present Report.

In reply to Mr. Gray, I may state that we brought up specimens of the material of the bottom by means of a tube fitted simply with a common door-hinge valve. The tube came up full of mud where the material was soft. There are a great many different plans of doing this, but we found no difficulty in getting specimens of the bottom with this tube and simple valve.

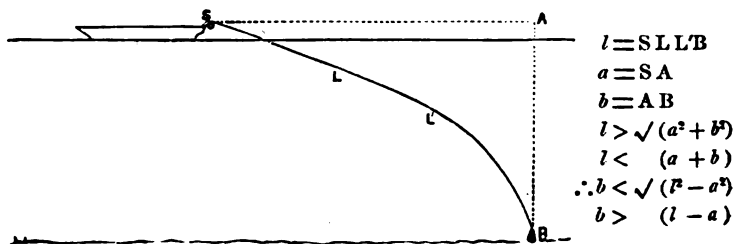
Sir W. Thomson having completed his explanation and resumed the chair, Mr. C. W. Siemens said : I may be allowed to make one or two observations upon this interesting communication which Sir W. Thomson has made to us ; and I would say, like many other mechanical arrangements which have been brought before us, this is not absolutely new, and I am not surprised to hear that attempts have been made to sound by wire instead of hemp-line. But the merit of the present apparatus, as well as of any other well-devised mechanical arrangement, consists of the appliances to make the result a perfect one, and in that respect I think the apparatus described this evening commends itself without any words from me. There are many difficulties which present themselves at first sight against the use of wire for soundings, but these have been met in the most perfect and ingenious manner. First of all, to get wire of such uniform strength as to reach to a depth of three miles required very considerable attention. Nevertheless, pianoforte wire offers extraordinary strength and toughness, and is, undoubtedly, the right material ; but how to join these wires in such a manner as to be reliable was a matter of great consideration, and that difficulty has been met in the most perfect manner. Then the mode of checking the motion of the drum by a single rope, although in itself involving only a Prony-brake, is a very ingenious mode of adapting a means to a particular end, and this is brought in usefully for telling in the most absolute manner when the weight strikes the bottom. As Sir W. Thomson says, attaching the weight itself to a piece of line, and adjusting the friction in such a manner as that the motion of the machine is stopped the moment the lead reaches the bottom, is another stage in the perfection of this method of sounding. There are other points of great ingenuity in the apparatus now before us. With regard to the practical value of taking deep sea-soundings by wire I have no doubt. I have myself made deep-sea soundings, and I know that in depths of 2,400 or 2,700 fathoms it occupied from four to five hours, and it was a difficult matter sometimes to keep the ship over the line. The lateral friction of the line in the water was so great that the lead did not pull, and therefore the ship had to be kept over the line. Instead of occupying five hours, this apparatus completes a deep sea-sounding in about thirty-five or forty minutes, and that is a matter really of the highest importance, especially in making soundings for submarine cables, where time is a great object.

I have sent the wire-sounding apparatus out with every ship I have had lately to fit for sea ; and I am quite sure the meeting will accord a hearty vote of thanks to Sir William Thomson for his valuable communication.

[Sir Wm. Thomson further illustrated "flying soundings" by diagrams on the board, and promised to append to the report of this evening's proceedings a short demonstration, with diagram, illustrative of this subject.] In conclusion, he said the thanks of the meeting were due to Mr. Siemens for having afforded him this evening the opportunity of exhibiting and explaining the apparatus, which was constructed for the cable-ship *Faraday*, and which was shortly to start on a submarine cable expedition.

APPENDIX ON FLYING SOUNDINGS.

Approximate soundings of great use, both in cable laying and in ordinary navigation, may be obtained in depths of 200 fathoms, or less, with remarkable ease, without reducing the speed of the ship below five or six knots, even when the wire is being paid out. For this purpose let the weight fall direct from the wire-wheel over the taffrail, with a brake-resistance of from five to ten pounds. The moment of its reaching the bottom is indicated by a sudden decrease in the speed of the rotation of the wheel. The moment this is observed, a man standing at the wheel grasps it with his two hands, and stops it. Not more than three or four hundred fathoms of wire having run out, the hauling-in is easy. In following this process I have generally found it convenient to arm the lead with a proper mixture of tallow and wax, in the usual manner, to bring up specimens from the bottom. The actual depth is, of course, less than the length of the wire run out. The difference, to be subtracted from the length of wire out to find the true depth, may be generally estimated with considerable accuracy after some experience. The estimation of it is assisted by considering that the true depth is always, as we see from the annexed diagram, greater than $l - a$ and less than $\sqrt{l^2 - a^2}$, where l denotes the length of wire out, and a the space travelled by the



FLYING SOUNDINGS.

ship, diminished by the space travelled horizontally by the sinker during the time of its going to the bottom.

The contrast between the ease with which the wire and sinker are got on board from a depth of 200 fathoms, by a single man, or by two men, in this process, and the labour of hauling in the ordinary deep-sea lead and line, by four or five men, when soundings are taken in the ordinary way from a ship going through the water at four or five knots in depths of from 80 to 60 fathoms, is remarkable. Professor Jenkin and I found this process of great value on board the *Hooper*, during the laying of the Western and Brazilian Telegraph Company's cables between Para, Pernambuco, Bahia, and Rio Janeiro. I am now having constructed, for the purpose of navigation, a small wire wheel of 12 inches diameter, to have 400 fathoms of pianoforte wire coiled on it, for flying soundings in depths of from 5 to 200 fathoms, without any reduction of the speed of the ship, or, at all events, without reducing it below five or six knots.

W. T.

OUR PARLIAMENTARY RECORD.

Military and Naval Training, April 19th.—A discussion, opened by the Earl of LAUDERDALE, took place in the House of Lords on the subject of what is called military-training in public schools and public training-ships, the noble earl urging Her Majesty's Government to promote the same.

Convictions of Smuggling, April 19th.—Mr. MONK asked in the House of Commons, whether seven seamen had been convicted at Leith for smuggling 20 lbs. of tobacco, and whether the sentence upon each of them was a fine of £100, with imprisonment until the fines were paid, though it was proved that the real criminal had disappeared, and that, in the words of the magistrate, "they had been proved innocent of guilty knowledge."—Mr. CROSS replied, that his attention had been called to the matter, and that the Bench thought, the statutes relating to Customs' revenue being of a stringent character, there was no option but to convict. The matter was, at present, under his consideration.

Merchant Shipping Amendment Bill, April 20th.—Replying to Mr. GOURLEY, in the House of Commons, Sir CHARLES ADDERLEY said: I had hoped to be able to reply that the reprint of the Merchant Shipping Bill would be out to-morrow morning. It will, however, take a day or two more to correct the proof, as I have tried as far as possible to insert such amendments of hon. members as I could wholly or partially adopt. The

Government are anxious to proceed with this Bill in Committee as soon as possible, and, when it comes on, to proceed with it continuously till it gets through. It certainly cannot come on next Monday, more time must be allowed after its reprinting, and the Government are full till Whitsuntide. I hope it may be one of the first Bills after Whitsuntide, and on Monday next I hope to be able to name the day.

The Arctic Expedition, April 26th.—Mr. WARD HUNT, in answer to Sir W. LAWSON, who asked whether the crews of the ships about to sail on the Arctic Expedition were not likely to be composed largely of Presbyterians, and, if so, whether it would not be expedient, instead of appointing two Episcopalian chaplains, to appoint one Episcopalian and one Presbyterian, said that he had no reason to suppose that the crews would be composed largely of Presbyterians; he had not the slightest idea of what the religious opinions of the crew were, but he had appointed two Episcopalian chaplains.

Explosive Substances' Bill, April 26th.—This Bill passed through Committee.

Sea Fisheries' Bill, April 26th.—This Bill was read a second time.

Seal Fishery Greenland Bill, April 26th.—This Bill passed through Committee.

The Arctic Expedition, April 27th.—In reply to questions by Mr. W. PRICE, Mr. WARD HUNT said the appointment of scientific officers for the expedition had been left to the Royal Society. They had selected two gentlemen, one skilled in zoology, and the other in botany. Several officers of the expedition had some knowledge in geology, and two of them were well skilled in it. The chaplains had not been selected in consequence of their possessing scientific attainments; one of the chaplains held a commission in the Royal Navy, and the other had been specially appointed to this expedition.

Wrecks between Romney and Dungeness, April 27th.—Sir C. ADDERLEY, in reply to Sir E. WATKIN, said that he had received a report from the coast-guard officer, who informed him that, upon the six miles of coast-line between Romney and Dungeness, there were twenty, and not twenty-three wrecks of ships to be seen above low water. Three of these wrecks, were marked by Trinity wreck buoys, and, as there were no marks over the others, he assumed that they were not considered to be dangerous to navigation. On the average of the last ten years, there had been six, and not twenty, vessels per year stranded upon this coast. There was no wreck register between 1844 and 1854; but he should be glad to produce a return of the wrecks upon this coast for the last ten years.

Explosive Substances' Bill, April 28th.—This Bill was read a third time in the House of Commons.

The Sea Fisheries' Bill, April 29th.—This Bill passed through Committee in the House of Commons.

Seal Fishery Greenland Bill, April 29th.—This Bill was read a third time, and passed in the House of Commons.

Guns in the Navy, April 29th.—In the House of Lords, the Duke of SOMERSET moved for a return of the different classes of guns now in use in the Navy, stating the various sizes of bore and the pitch of rifling, whether of uniform or of increasing spiral ; stating also in each class of gun the number of rifled grooves ; and a return of the various projectiles, stating their weights and lengths, with the number of studs and the bursting charge of each hollow projectile. After some discussion on the subject, the motion was agreed to.

Alleged Ill-Treatment of Cattle, April 30th.—Replying to Earl DELAWARE, the Duke of RICHMOND said that no statement was made as to the name of the vessel on board which the cruelty was alleged to have taken place, but he had caused inquiry to be made by the Privy Council inspector at Deptford, who thought it must have been a vessel from Antwerp, with 196 or 200 head of cattle on board, which were landed at Deptford, as usual, under the superintendence of the Custom House officers. As the regulations under which cattle were landed at Deptford were extremely stringent and sufficient for the purpose, he did not propose to issue any further regulations on the subject.

Explosive Substances' Bill, May 3rd.—This Bill was read a second time in the House of Lords.

The British Consul at Bayonne, May 3rd.—In the House of Commons, Mr. BOURKE informed Mr. B. COCHRANE that in consequence of the report of an officer from the Foreign Office, the Consulate at Bayonne had been reduced to the post of Vice-Consul, and the salary fixed at £100 a year. The Government did not believe that the duties were of a very onerous character, for there were only fifty British ships per annum which visited the port, while there were no British firms there, and the correspondence was extremely light. He was sorry to have to say that it was not the intention of the Government to interfere with the present salary or duties of the Vice-Consul at Bayonne.

The Coast-guard and Turnpike Tolls, May 3rd.—In answer to Admiral EGERTON, Mr. HUNT said he believed that there was no doubt that officers of the coast-guard, when on duty and in uniform, were included in the exemption from payment of tolls which was enjoyed by officers and soldiers of the Army, because the Admiralty had been so advised, although he believed that this view was not always taken by toll-keepers. There had been no official decision upon the subject, but if these officers had to pay tolls they could reclaim it in their accounts.

Naval Cadet-ships, May 3rd.—Mr. HUNT also informed Sir G. JENKINSON that examinations for naval cadet-ships were no longer to be competitive.

The Sea Fisheries' Bill, May 3rd.—This Bill was read a third time.

Commercial Tariff of Italy, May 4th.—Replying to Mr. POTTER, Mr. BOURKE said that the Government were aware that it was the intention of the Italian Government to modify the tariff treaties which existed between that country and other powers. England had no tariff treaty with Italy, but there was a treaty of commerce and navigation which contained the most favoured nation clause, and therefore England would gain by any concessions that Italy might make to other countries. The matter was, therefore, considered by his noble friend, the Foreign Secretary, as one of great importance, and for some time he had been carrying on a correspondence in reference to it. In the course of this correspondence the views of the English Government had been pressed upon the attention of the Italian Government, but at present it was thought that it would be premature to present to Parliament the papers upon the subject, the matter being still under consideration.

Draught of Water Records, May 4th.—Mr. PLIMSOLL consented, in accordance with the generally expressed wish of the House, to postpone a motion which he had on the paper as to the Records of the Draught of Water, for the purpose of facilitating the discussion of the Marquis of Hartington's motion relative to the exclusion of strangers.

Ill-treatment of Cattle at Deptford, May 6th.—Referring to a correspondence in the *Times* on the above subject, Sir GEORGE JENKINSON put a question to the Vice-President of the Council, in reply to which Lord SANDON said that attention had been called to both Captain Sloane Stanley's letters in the *Times* on the supposed ill-treatment of cattle on board a vessel from Antwerp to Deptford, and that as soon as the first letter appeared, full inquiries were directed to be made by one of the inspectors of the Veterinary Department of the Privy Council, and a letter upon the subject was also addressed to the Secretary of the Society for the Prevention of Cruelty to Animals. He proposed to lay upon the table of the House immediately the report of the inspectors, together with the letter from Mr. Colam, the able Secretary of the Society for the Prevention of Cruelty to Animals, and stated that he need hardly assure his hon. friend that the Lord President and himself were most anxious to do all in their power to prevent unnecessary sufferings to animals, a matter respecting which the public mind was happily very susceptible.

Sea Fisheries' Bill, May 10th.—This Bill was read a second time in the House of Lords.

Public Prosecutors, May 10th.—The HOME SECRETARY, in reply to Mr. DUNDAS, said that it was the intention of Her Majesty's Government,

before the end of the session, to introduce a Bill for the appointment of public prosecutors in England.

Sea Fisheries' Bill, May 11th.—This Bill passed through Committee in the House of Lords.

Sea Fisheries' Bill, May 13th.—This Bill was read a third time and passed in the House of Lords.

Explosive Substances' Bill, May 13th.—This Bill was read a third time and passed in the House of Lords.

Widows and Children of Sailors and Marines, May 13th.—Replying to Sir W. EDMONSTONE, Mr. WARD HUNT said that the scheme put forward by the *Army and Navy Gazette* of the 30th April last, for the organization and maintenance of a fund for making provision for the widows and orphans of sailors and marines, had been examined by the Accountant-General, and his report shows that no such provision could possibly be made for widows and children in return for the contributions proposed to be levied, even if the whole of the continuous service men and a large number of boys, besides all the marines and coast-guard, were to subscribe, which would be very unlikely.

Adjournment of Parliament.—The House of Commons adjourned on the 13th, and the House of Lords on the 14th May, for the Whitsuntide recess.

THE PROPOSED TEST CLAUSE IN THE NEW MERCHANT SHIPPING BILL.



AMONG the provisions contained in the Merchant Shipping Bill now before the House of Commons, there is none which possesses more importance for shipowners and shipbuilders, or which is likely to have a deeper influence on the shipping trade generally, than the clause proposed by Mr. Reed, M.P., with regard to testing the iron used in the construction of iron ships.

There seems to be little doubt that the quality of the metal so used has deteriorated within the last few years, and any measure which would tend to check this deterioration, without producing any counterbalancing disadvantage, would certainly deserve the heartiest support. In the present day ships are not unfrequently built to sell, rather than to endure the perils of the sea; and any regulation which might fairly be expected to reduce the number of the flimsy constructions annually produced for this purpose, is worthy of the most careful consideration.

The question then arises whether Mr. Reed's clause fulfils either of these requirements. Putting aside the perplexing problem as to the precise value of human life, and as to what sacrifices the community at large are justified in making in order to ensure the safety of the few, let us inquire whether the clause now under consideration holds out a fair promise of yielding *any* permanent benefit.

If carried into effect it would possibly result in the production of a better class of ship plates generally, but this improvement would simply mean a corresponding increase in price, and the second result would be, that those indifferent or unscrupulous owners, who still preferred cheap ships, would obtain them in foreign markets. At the same time there is an equal possibility that the measure would be wholly inoperative. The test is not compulsory, its enforcement is left to the option of the ship-owner or shipbuilder, so that any person whose object was merely to obtain a cheap vessel, would not find himself in any way hampered by Mr. Reed's clause; he would simply have to ignore its existence. Those who are practically acquainted with iron shipbuilding, are well aware that such a test as that proposed is perfectly unnecessary, and would be of no service whatever to owners who have any real desire to obtain a first-class vessel. There is no test which shows the true quality of ship plates more thoroughly than the manipulation which they must undergo while being worked into the ship, and no greater safeguard is possible than constant and careful supervision of the construction as it proceeds. This is the method adopted in the case of vessels classed at Lloyd's, and by all the large companies whose vessels are uninsured. The question is entirely one of money, and this optional test would neither induce nor compel those owners who were unwilling to do so, to pay an increased price for their vessels.

Of even greater importance than the material of which a ship is constructed is the plan and workmanship of its construction. It is probable that more vessels are lost through bad workmanship than through the defective quality of the iron of which they are built. Yet against bad workmanship the clause makes no provision. The system of letting the rivetting of the plates by the "piece" cannot fail to produce a slovenly style of finish, unless a careful system of supervision is maintained, which is never the case when cheap ships are under construction. But the portion of the clause to which the greatest interest is attached is that which empowers an owner to reject a ship ("any contract notwithstanding") on finding that any portion of the iron used in her construction fails to stand a certain required test. In the same way the builder may reject the iron supplied to him by the manufacturer. It is impossible to see the limit of the field which is here opened up for the exercise of dishonesty, or to estimate the amount of litigation that would

follow such an enactment. There would be no difficulty in finding, even in the best built ships, pieces of iron that would fail to stand the test (indeed, in some parts of a vessel great strength is not required), while no amount of care on the part of the iron manufacturer would render him perfectly safe against the risk that a single weak plate might be discovered among a large quantity delivered for use in the shipyards. The consequence would be that, in a falling market, unscrupulous owners and builders would easily find the means of rejecting, or of endeavouring to reject, the contracts they had made. We have no hesitation in saying that the result of this portion of the clause would be simply ruinous to the shipping trade. It would involve risks which no respectable firm of shipbuilders or iron manufacturers would run, except at prices that must inevitably drive shipbuilding from the country.

But were the clause perfect in other respects, it possesses one great imperfection which it is scarcely necessary to point out. No provision is made for either ships or plates that may have been condemned, so that if it is found that a vessel which has been built for A cannot stand the required test, there is nothing to prevent her builder from selling her to B, who may be prepared to give a slightly reduced price for her.

Mr. Reed's experience of shipbuilding is equalled by that of very few men living. Had his knowledge of the commercial world, and of the laws of supply and demand been as wide, it is not likely that he would have proposed a scheme so impracticable, or so mischievous as that which now stands under his name in the new Merchant Shipping Bill. An evil certainly exists. But to rush blindly at the first remedy which suggests itself would be a fatal mistake. To do so in ordinary cases is to tempt failure, but something more than mere failure might follow the passing of such an enactment as that proposed by Mr. Reed. Let us hope our legislators will hesitate before committing themselves to an error from which they would in all probability be awakened by the discovery that a large portion of the shipping trade of the country had been driven into foreign hands, never to return.

SHIPBUILDING, 1875.

SAILING SHIPS.

	No. of Ships first four months.	No. of Ships correspond- ing period last year.	Gross Tonnage first four months.	Gross Tonnage corresponding period last year.
Aberdeen ...	3	4	1,592	2,333
Barrow ...	3	—	2,105	—
Belfast ...	1	1	821	1,878
Bristol ...	—	4	—	483
Cowes ...	4	6	374	361
Dartmouth ...	12	9	888	533
Dundee ...	2	3	1,900	1,217
Faversham ...	1	4	39	368
Glasgow ...	18	6	20,045	5,161
Greenock ...	8	—	7,234	—
Hull ...	5	8	322	537
Jersey ...	4	2	437	117
Liverpool ...	9	10	5,685	5,434
London ...	3	10	138	1,196
Middlesbro' ...	1	1	182	1,467
Newcastle ...	1	3	370	460
Plymouth ...	4	3	727	196
Port Glasgow ...	7	5	6,985	5,276
Portsmouth ...	2	4	198	540
Rochester... ..	4	3	196	117
Southampton ...	5	7	476	574
Stockton ...	1	1	1,472	1,740
Sunderland ...	19	14	14,723	13,143
Whitehaven ...	2	1	2,255	1,249
Workington ...	1	—	1,069	—
Yarmouth ...	2	6	38	216
Other Ports ...	61	69	8,516	7,783
Total	183	184	78,787	52,384

SHIPBUILDING, 1875.

STEAMSHIPS.

	No. of Ships first four months.	No. of Ships correspond- ing period last year.	Gross Tonnage first four months.	Gross Tonnage corresponding period last year.
Glasgow ...	84	84	3,4901	55,696
Greenock ...	6	8	8,074	7,151
Port Glasgow ...	10	8	6,284	8,856
Sunderland ...	6	9	8,108	11,445
Newcastle ...	11	12	13,757	18,551
North Shields ...	4	13	3,030	4,690
South Shields ...	3	2	2,451	646
Liverpool ...	2	14	1,178	9,432
Dundee ...	4	2	1,988	3,278
Hartlepool ...	8	3	8,820	2,691
Aberdeen ...	2	3	1,357	1,528
London ...	2	4	349	681
Belfast ...	—	2	—	10,012
Stockton ...	2	2	3,392	3,280
Kirkcaldy ...	—	1	—	1,160
Middlesbro' ...	7	4	6,795	3,746
Hull ...	1	3	3,110	3,382
Bo'ness ...	—	1	—	1,344
Barrow ...	—	2	—	3,411
Whitby ...	3	—	3,595	—
Other Ports ...	8	7	1,404	1,185
Total	118	129	108,588	151,565

CORRESPONDENCE.

OUR MERCHANT SEAMEN.

To the Editor of the "Nautical Magazine."

SIR,—Under the above heading I read an article in Mitchell's *Maritime Register*, dated April 16th, 1875, and I came to the conclusion that not only was the subject treated in its proper light, but that it was also one which every British shipmaster felt himself justified in giving his candid and honest opinion on the matter, and I am glad to see that the writer of the article in question agrees with me and every right-thinking commander that the increasing insubordination in the Merchant Service has reached a point at which the interference of the Legislature has become a duty in the interest of public safety. Does the respected and worthy member for Derby consider that we as a body have not enough to put up with from refractory seamen, or have not enough to do to keep them in check without giving them more license, and by the very expressions and arguments that he uses increases the evils that already exist, without legislating for them? When the Merchant Shipping Acts Amendment Bill is amended, I hope (and I may safely say that all shipmasters hope so too) it will protect the shipmaster from insolence and insult, as well as assault, for it is well known that now-a-days a seaman can almost go any lengths in abuse without bringing himself under the lash of the law, or even subjecting himself to a fine, and those that do so are generally the very worst of characters—men who have spent the most of their time in gaols—men, indeed, who would rather go to gaol (in a port abroad) than prosecute a voyage in any ship, be her character ever so good, or even supposing the captain was an archangel (which is barely possible now-a-days, when surrounded by such loafers).

I assert with confidence, and no one that knows anything about the matter can deny it, that our seamen are getting worse and worse every day. I find it so every voyage I make; and those are the men for whom more protection is sought. I am sorry for them; but I will be infinitely more sorry for those whose lot it is to command such men, should such protection be extended. It remains with the Legislature, in its wisdom, to improve our seamen, to elevate their condition, and to make them worthy of the name of British seamen; but to do so, the stringency of the discipline clauses in the new Bill must be increased, and the authority of the shipmaster more fully supported.

GEO. C. COATES,

Master ss. *Royal Welch*.

Havre, May, 1875.

MARINE INVENTIONS.

[On receipt of a summarised description of any new invention connected with ships or navigation, the Editor of the *Nautical Magazine* will publish, under the above heading, a brief account of it.]

PILLOW LIFE PRESERVERS, for the use of crews and passengers of steam and sailing vessels, yachts, &c., in case of collision, wreck, stranding, or other accident. By Royal Letters Patent. The patent consists of two pillows, which are used as ordinary pillows in a general way, but which can be made available for saving life if required. They are fitted with tapes to sling them over the head and tie round the body—one pillow on the chest and the other on the back. The pillows being made of a very buoyant material, act as a life-buoy in case of danger, and the advantages are so manifest that they merely require to be enumerated, as follows:—1. The ease and rapidity of attaching them to the person. 2. The perfect buoyancy of the person when in the water—a pair of these pillows being capable of supporting a man of 20 stone breast high. 3. The protection they afford from floating wreck, or dashing against rocks, &c. 4. The fact that by reason of being tied to the person there is no occasion for holding on to them as to a common life-buoy. The pillows being lashed the narrow way across the chest and back, they do not interfere with the action of the arms in any way, and a person could swim, haul a rope, or pull an oar, without the slightest inconvenience. 6. The slight cost is another feature—because the two pillows being placed at the head of the mattress make the mattress so much shorter, and consequently cheaper. 7. These pillows can be used as boat cushions at watering places, and, in the event of a person falling overboard, or the boat upsetting, used as life-buoys.—ARTHUR WOODS, 352, Westminster Road, Kirkdale, Liverpool.

[We understand the Allan Line have ordered a number of these pillows.—ED.]

MR. A. G. FINDLAY, F.R.G.S.—We regret to have to record the death of this distinguished geographer at an advanced age. In the early days of the *Nautical Magazine*, Mr. Findlay contributed much very valuable information to its pages, and few men have added so much to hydrographic knowledge for the benefit of mariners. His life's work will live after him, and be found of great value to all succeeding navigators.

THE "SCHILLER," OF HAMBURG,

3,600 TONS, WRECKED 7TH MAY, 1875. LIVES LOST, 312.

THIS vessel, one of the German Transatlantic Steamers, trading between Hamburg and New York, was wrecked through running on the Retarrier Rocks off the Scilly Islands, in a dense fog. The first point to be inquired into and decided is, whether she had approached the rocks by accident or by design. From the deposition of the mate, it appears that her dangerous proximity to the rocks was accidental, and that the vessel had simply overrun her distance. From the report of the Coast-guard officer on the spot, it would appear that the proximity was the result of premeditated design, that is to say, for the purpose of making a signal. Of the actual reasons which led to the ship being taken so close to such well-known dangers as those in the immediate neighbourhood of the Scilly Isles, we can say nothing at present, as the whole circumstances are about to be investigated by a Board of Trade enquiry, and as it is never our practice to make any remarks on the merits of any case pending investigation.

Apart from the question of recklessness, or negligence, or accident, or over-confidence, and apart from any question as to the actual cause of the wreck, there are one or two observations or reflections that will not be *mal apropos*.

The first mate of the *Schiller* has stated on oath that, "At the time of sailing the ship was in first-class condition, and proceeded on her voyage all well; but from the 4th to the 7th of May the weather was hazy, with much rain, and unable to obtain good observations. We were steering E. by S. At 9.30 p.m. master gave orders to steer S.S.W. On Friday, the 7th, at 10 p.m., tide at the time quarter-flood, weather very thick, wind S.W., blowing moderately, the ship was going slowly, sails furled, steering S.S.W., when, without any warning, the vessel struck. The engines were reversed full speed by order of the master, in order to back her off, but without avail; the ship was rapidly filling. Immediately gave orders to get the boats out, which was done, but the sea was so heavy that the six lifeboats were carried away. A few people in one managed to keep afloat, and were ultimately saved. We fired rockets, fireballs and guns until 12 o'clock midnight. When the sea had increased and made a clear breach over the ship, the passengers and crew took to masts and bridge, and some went into the cabins. The mainmast fell over the side at 7 a.m. on the 8th inst. Some of the passengers and crew were saved. About half-an-hour afterwards the foremast fell. I

and others, about 84, fell with it. I and four others were saved by boats from the shore. Four gigs from the islands came to our assistance and saved a number of passengers and crew. The ship is totally wrecked. In consequence of the loss of the ship 312 lives were lost by drowning, the remainder, 43, being saved by boats."

The fourth mate has stated on oath that, "On May 4 to 7 the weather was hazy, and we did not obtain good observations. On the 7th we were steering S.E. by E. $\frac{1}{4}$ E. until half-past nine p.m., when master ordered S.S.W. course to be steered. On Friday, the 7th, at ten p.m., the tide flood, weather foggy, wind S.E., fresh, the ship was proceeding on her passage at slow pace, and, without any idea we were so close to Scilly, struck suddenly on a reef of rocks; the water rushed in immediately, and put the fires out. Orders were given to get boats ready, and two gigs and one lifeboat were got in the water. Two lifeboats were smashed by smoke-stack falling. Life-belts were distributed among the passengers and crew. Fired guns and rockets from 10.30 p.m. till 11.30, the sea at this time breaking over the ship. The captain and three engineers and passengers were washed off the bridge; the remainder of the passengers and crew took to the rigging. The mainmast fell first. I was in the fore-top with several others when it fell, and some were picked up in boats from the shore."

By way of summary we arrive at the following conclusions:—

1. The ship was a first-class ship, in first-class condition.
2. She had been duly surveyed, and inspected, and certified, by Government officials.*
3. She was fully provided with boats and life-jackets.
4. Her loss with 312 persons (like all losses attended with great sacrifice of life) arose from circumstances over which inspection and surveying of the most complete and perfect of systems had no influence.
5. When the disaster happened, six of the *lifeboats* were carried away. Out of all her boats only two gigs and one lifeboat were really lowered.
6. Lifebelts were distributed amongst the passengers and crew, and forty-three persons were saved, while 312 were drowned. Of the forty-three saved we learn that only one was a woman.

This wreck and the consequent loss of life was at any rate not caused by the "greed of shipowners," or by a "coffin ship," or by "imperfect equipment," or by "absence of Government surveys," or by "overloading," or absence of a "load-line," or through any of the causes to

* The survey of German passenger steamers in the New York trade is practically the same as the English survey for similar ships.—Ed.

which platform orators attribute loss of life at sea, and the question, therefore, is, was she lost by unseaworthiness of another sort—viz., by the unseamanship of her seamen, of the master, officers, and crew? How did she get on the rocks, and why? Was any precaution neglected, was the lead used, was proper allowance made for well-known currents, and so forth? Whether, as has been stated elsewhere, she was purposely taken near the Scillies in order that she might make her signals to the telegraph station there; or whether she was allowed to approach the Scillies without the master and officers being aware of their dangerous proximity, the question still remains to be answered, why a seaworthy ship is so navigated by her crew in a fog as to run on dangers that should even in clear daylight be approached with the utmost caution! This is for the Court of Inquiry to elucidate.

One circumstance has come to the front with much force in connection with the lamentable wreck of the *Schiller*, and that is, that, notwithstanding the distinct statutory provision to the effect that rockets and guns are to be used at sea as signals of distress only, they are still illegally used by contumacious persons as private signals to announce arrivals and departures of ships. There is an allegation that the *Schiller* was taken near the Scillies in order that she might expressly thus break the law by firing illegal rockets and guns. We do not, however, attach any importance to this allegation as regards the special case of the *Schiller*, because it is altogether against common sense to suppose that, after several days of fog, so experienced a master mariner as Captain Thomas would, under the circumstances, have approached so serious and well-known a danger as the Retarrier Ledge for any purpose whatever, and certainly not for the mere purpose of firing illegally guns and rockets for the sole object of making known the fact that his ship was passing the Scillies. But he, and those with him, seem to have suffered through the evil doings of others, for when the *Schiller* subsequently, in dire extremity, did manage to fire her signals of distress they were, like those in the *Stanley* case, accepted as a matter of course by the people on shore as being the usual illegal arrival signal: and thus it happened that while the statutory distress signals were being repeated from the ship, and hundreds of people were in peril, the agent of the ship, or someone on his behalf, hearing them, was sending a telegram to London, reporting that a steam vessel was making her customary passing signal, and was passing "all right." Another circumstance that has come to the front is the very great danger run by vessels when they attempt to approach such out-lying dangers as the Scilly Rocks for the mere purpose of telegraphic communication. Seeing that a telegraphic station is the one thing that lures ships to approach dangerous rocks, we should not be surprised at some member of Parliament calling attention

to the attendant risks ; but we are a little surprised at seeing that a member of Parliament actually now purposes to convert all lighthouses into similar sources of attraction and danger to passing ships by converting them all into reporting stations by means of the establishment of telegraphic reporting stations.

A mental note that the ordinary traveller may make with advantage is that, to be safe at sea, he should never travel by any line of steamers (if there be any), the authorised practice of whose masters is to make for dangerous headlands at all risks, and at all times of weather and tide, for the mere purpose of having their names reported, and whose further habit then is to use, in defiance of all law and safety, the one signal that ought to be, and is, regarded by every well-meaning seaman, as almost sacred—viz., the international signal of distress. We do not believe that it is the custom of the "Eagle" line to use signals of distress improperly; we trust that they are free from so serious a crime, for it is no less; but we do say, as a general proposition, that unless the sea-going traveller does make this mental note, he will find himself some day sinking in the breakers, and people ashore regarding the signals of distress as merely an ordinary and common, though improper, infraction of the law, of which they need take no notice.

Another very impressive point is this, that as it was in the case of everyone of the other large casualties, we have named below as being attended with great loss of life, so it was in the case of the *Schiller*—the boats were practically useless, and the life-belts were of of no practical general use. And yet pressure upon pressure is put on the Government that extended reliance should be placed on these equipments. It really does appear as if no lesson, however plain, conclusive, and fatal, will establish the fact, that let boats and jackets be ever so numerous or so good, they always fail, and always must fail, in the confusion attending a wreck.

What lesson the official inquiry into the wreck of the *Schiller* may teach us we cannot yet tell, but the wreck itself has already too convincingly and too sadly shown, that the most perfectly constructed and equipped of ships, supplied with the best of lifeboats, and with ample life-jackets for crew and passengers, has gone to destruction, with 312 human beings, in spite of all the precautions, so far as they possibly can be taken in port, of surveys, inspections, loading, manning, and equipment, and after the adoption in her case of every one of the precautions and supposed preventions that humanitarians have been, and are, parading before the eyes of the ignorant as infallible cures for all wrecks. It does not suit the popular idea to admit the truth, that ships are, as a rule, lost from causes wholly beyond anything that a survey in port can

touch. The fashion now is to convert every catastrophe into a peg on which to hang some pretext for Government interference, to rely too much on a Government surveyor, and too little on the ordinary precautions that ought to be taken by seamen; and so from this time forwards, the 312 lives lost in the foreign ship, *Schiller*, will swell the quotations of losses on our coasts, and we shall have the trade-unionists, and their fellow-quasi philanthropic agitators, bringing forwards the increased loss of life, in 1875, as a special reason for a Government survey of all ships in port.

No one has yet found any advocate for Government interference with ships in port who would admit that the 15 (fifteen) ships named below which were lost with 5,558 lives (we put it in words as well as figures), five thousand five hundred and fifty-eight lives, had all really gone through the very forms and ceremonies of Government survey and inspection in port, and had all received, and at the time of the loss all possessed, Government certificates of seaworthiness and fitness. In the past and to the present, agitators point to the whole number of ships and the whole number of lives lost, and then cry aloud for Government surveys, in order to stop this "tremendous sacrifice" which they say is caused by the "greed of unscrupulous owners." Advocates of the "Grandmotherly interference" persuasion have continually ignored, and do now ignore the fact, that the great loss of life at sea happens in the new ships, or in the very ships to which the much vaunted system of survey they advocate is already fully applied. Having ignored this truth in the past and in the present, the advocate of Government interference will not find it profitable to remember it in the future. The necessity for our calling a passing attention to it is therefore obvious. Is not the simple deduction from the facts, that if life can be saved at sea by any parental attention to ships in port, it is to be saved by another sort of attention altogether—viz., by the increase of personal responsibility of owners, master, and crew, and even then by attention, not to the little wooden coasting cargo ships, but to the ships already classed in the existing Register books, as they are chiefly the ships that are "missing" with their crews; the ships to which the supposed panacea of Government inspection and Government load-lines have been applied for many years?

* *Orion*, 100; *Amason*, 104; *Anne Jane*, 360; *Tyleur*, 290; *City of Glasgow*, 480; *John*, 191; *Pomona*, 424; *Royal Charter*, 446; *London*, 238; *City of Boston*, 191; *Cambria*, 180; *Asia*, 821; *Northfleet*, 293; *Atlantic*, 545; *Indus*, 420; *Cospatrick*, 480.

MARINE INSURANCE.

AT the annual meeting of the Institution of Naval Architects, a discussion took place on the subject of Marine Insurance, on the reading of a paper by Mr. Fenning, and we think it well to reprint the speech of Mr. Charles Lamport, it being so fully in accordance with the views entertained by the *Nautical Magazine* as to the power of underwriters to protect themselves if they choose.

Mr. Charles Lamport said:—I think the speech to which we have just listened is the best commentary that can possibly be on there being anything like registration or compulsory registration. The last speaker has told us that it is necessary that insurers and shipowners should themselves depend upon registration, and he has specified Lloyd's as a place where ships should be registered. Now I do not know whether that gentleman is aware—I am sure he must be, but he omitted to state it—that Lloyd's registration is no indication of the strength of a ship; it is an indication of the duration of a ship, but not of its strength. If this gentleman insures his goods by a ship or ships with the understanding that they are to occupy a certain class in Lloyd's register, it ought to be necessary to say whether that class should be, if they are wooden ships, A1 for four years or A1 for fourteen years, because I, as a shipbuilder, know that the difference is in the strength of the materials, and that the classification is assigned to ships in respect of their probable duration. Now, an A1 ship for four years or for seven years, built of soft wood, is not capable of carrying cargoes so well as an A1 ship for fourteen years is, and if that gentleman thinks it right that the person insuring his goods should specify only that they are to be classed A1 at Lloyd's, he is labouring under a deception and enticing the shipbuilder not to go for the highest classification, but to be content with the lower one. That is one reason why, I think, shipowners should depend upon themselves, and not look to any system of classification. Then with regard to what has fallen from Mr. Fenning I have been most agreeably disappointed. Listening to Mr. Fenning, knowing that he was going to read a paper this evening on the question of insurance, I fancied that I should have heard repeated the indictment that has been dinned into the ears of the public during the last two or three years of Mr. Pimso's agitation against the shipbuilders and shipowners. Now I feel pleasure on this occasion to find that Mr. Fenning is coming forward in the most heroic manner and taking upon himself, or rather upon the underwriters, to which class he belongs, the blame which we, the shipbuilders and shipowners, have been labouring under during the last two

or three years. The statement was made in the House of Commons when Mr. Brassey introduced the question of insurance, which was the key to the whole of this great question of preventible loss of life at sea. I am quite satisfied that that is so ; but when it is stated that with a view to using this key to prevent that loss of life, you ought to apply legislation to questions of insurance, it seems to me that we are putting the cart before the horse. If the Legislature is to tell Lloyd's insurers—sitting in that large, ill-ventilated room which they have at the Exchange—how they are to carry on their business, what do these gentlemen become ? They would not be carrying on business on their own account, but as mere servants and agents of the Board of Trade, and if the same sort of thing were to take place with regard to the compulsory classification of ships—if the Government are to take the onus upon them I have no objection ; but all I can say as a shipbuilder and a shipowner is, that if the Government compels me to class my ships I absolve myself from all responsibility, and whatever happens to that ship, if the Government Inspector has passed that vessel, I could plead that in any court of justice as a justification for sending the ship to sea in the condition in which she was. Of course it would take too long to go into all the details of what would be necessary in order to make an efficient inspection, but I sum them up and say that it must be all or none. It must begin with the model of the ship ; it must go on with the specifications of the dimensions and the materials of the ship ; it must deal with the workmanship and equipment of the ship ; and it must not be satisfied with that, but when the ship is loaded there must be an inspector looking about to see how she is loaded, for anybody knows that with a given amount of cargo of varying density and varying weight to be put into the hull of that ship the ship can be made so to labour at sea as to throw her masts over her sides or to be as easy as possible. Therefore, in loading you must have an inspector, and, not satisfied with that, send an inspector to sea. I think I told you yesterday, from the Government returns, that out of the whole of the losses inquired into for the last twenty-seven years, $4\frac{1}{2}$ per cent. of those losses has been attributable to unseaworthy ships, and 69 per cent. has been attributable to carelessness, indifference or ignorance on the part of the crew and the captain. Therefore, I say, if you want, by inspection, to stop this great loss of life and property at sea, you must send an inspector to overlook the captain in a storm, and to tell him when to take in this sail or that sail, and how he is to do this, that, and the other, and the captain must be altogether under the hands of the inspector. Well, gentlemen, I think that is a *reductio ad absurdum*. But, reverting to the question of insurance, I will say that it is at the bottom of the whole question. It is not founded on inspection, or ought not to be ; but it is founded on an appreciation of the cargoes. I am happy to find, from the tenor of Mr. Penning's

paper, that he disapproves of the system carried on, and his observations are the most complete condemnation of the system of insurance carried on in London that can possibly be. I have not only, as I have already said, been a shipbuilder and shipowner, but an underwriter for a period of fifteen years, and the result of my operations has never amounted to a loss except in one year, and that was when the well-known cyclone took place in Calcutta, which was a perfectly exceptional circumstance. I have friends who are connected with underwriting in London, who tell me that it is a miserable business. I do not know whether Mr. Fenning would say so. If it is a good business they have no right to complain, and if it is a wretched business then they want to go to the Legislature and bring their case before the public with a feeble wail, although they have everything in their own power. If they are dissatisfied, why do they insure bad ships? Why do they depend upon Lloyd's Register when they know that Lloyd's Register deceives them? Why do they not establish, as at Liverpool, their own system of inspection, where there is a salvage association and an association of underwriters, who have their own respected and able inspectors to go and look at their ships? Some of my friends tell me that the system in London is this:—A certain order comes to a broker to insure a certain amount on the hull or cargo of a certain ship. What is the operation? I ask Mr. Fenning to challenge my statement if it is inaccurate in any particular. The broker goes at once to the leading underwriter and says, "If I can get Mr. So-and-So's name down my business is done." And why, because all the rest of the underwriters, who are eager to follow like so many sheep, say to themselves, "I see Mr. So-and-So has looked into it, and it is all right." But Mr. So-and-So has not looked into it, and it is all wrong—and then all the rest of the gentlemen follow with their £50, £100, or £200. It is the old story, and what do they do? They do not say, "I neglected my own business and did not attend to it, but I have been hanging upon a broken reed and I will not do so any more." I challenge Mr. Fenning to say whether this is not the system. (Mr. Fenning: Yes.) I am an underwriter in Liverpool, and I venture to say I have been a successful underwriter. The system which is adopted in Liverpool is entirely opposed to that in London. In London the broker goes into a large room and gets the leading underwriter to put down his name. He says, "Will you take a line on this ship?" And then if one will not, another probably will, and whether it is good, bad, or indifferent, they care nothing. That is not the system at Liverpool. The system at Liverpool is that every broker has his special underwriter. For instance, my name is in the hands of a respected firm in Liverpool, and when they receive an order for an insurance upon the hull or cargo of a ship, they have to consider the interests of all those friends who, with

perfect confidence, put their business and their prospect of profit and loss into the hands of their firm. Now, what is the result of that, and the principle of it? Confidence and responsibility; not law; not outside coercion or anything of that kind, but that which should be the true spirit and principle of all business—viz., confidence and responsibility. These brokers in Liverpool attach the names, but they feel that for every £100 they commit one of their friends to in underwriting his name to the order they have got, add to the moral responsibility which they have cast upon them of seeing that the risk they are running is a fair one; and I must say that, as a rule, they attend to that, and, therefore, underwriting in Liverpool is as entirely different from underwriting in London as can possibly be. When I was a shipbuilder, and imported timber from abroad, I never could get my own firm to take the risks upon those timber ships. I always sent to London to insure these cargoes, and they were always taken at once without the slightest hesitation. If I could ever get my friends in Liverpool to take such risks at all, it was at such a rate that I could not afford to pay, whereas, if I sent them to London they would jump at them at once at a low figure. I want to know who is to blame for that—is it the shipbuilder and shipowner? Let me recur to my own experience as a shipbuilder. When I began shipbuilding, I did it because the business I was engaged in was one that did not suit me. I was fond of ships, and shipbuilding was my hobby. I wanted to build the best ships I possibly could. I built ships for a few friends of my own, and I said: "If you will give me a little more money, I will do this and that which will be an essential benefit to the ship." They patted me on the shoulder and said:—"My dear sir, it is no use doing anything of the sort, because we cannot pay you any more for it; nobody will pay us more freight, because the freight depends upon the ship being classed A1 at Lloyd's." As to insurance, they did not care anything at all about it, and if they got the ship registered A1 at Lloyd's that was considered enough. I wish to ask you, gentlemen, whether anything could put a more complete stop to progress in shipbuilding with a view to the preservation of property and life at sea, than this system of lax and profitless insurance? Mr. Fenning is the representative here of the London underwriters, and as I do not like to say anything when a person's back is turned, I say to his face that the greatest part of this mischief—this scandal—this imputation on the business reputation of men connected with the commerce of England, which has been exposed by Mr. Plimsoll's manly and energetic efforts during the last two years, is to be charged not generally upon insurers, but upon the lame, ignorant, and loose way which people have of doing business in insuring in London.

THE BRITISH SHIPPING TRADE WITH SWEDEN.

THE importance of the commercial relations between Great Britain and Sweden is conclusively demonstrated by the returns published by the "Commerce Collegium," or Swedish Board of Trade. The latest figures are for the year 1872, but judging from the rapid growth of the revenue derived from the Customs' dues, there is good reason to suppose that the present value of the Swedish foreign trade exceeds £30,000,000 sterling. Whilst there is a large and rapidly-increasing British trade with Sweden, the amount of British shipping engaged in it is not only small, but comparatively on the decrease. Having regard to the unfavourable conditions under which British shipping has to compete in Sweden with the shipping of other nations, especially with that of Sweden and Norway, Mr. Gould, Secretary of Legation at Stockholm, has rendered an efficient service to maritime interests, in pointing out the causes that have contributed to bring about this unsatisfactory result. The most prominent, even to a casual observer, consists in the marked inferiority, as a class, of British shipmasters in comparison with those Scandinavian masters against whom they are pitted. Besides the great advantages which the Swedish and Norwegian shipmasters naturally possess in dealing with their own countrymen, and in being thoroughly acquainted with the navigation of their own seas, they are generally, in point of education, professional knowledge, manners, and steadiness, superior to, by far, the greater number of British shipmasters employed in the like trade. As a consequence, shippers, both in Sweden and Great Britain, employ the former in preference to the latter, although their terms may be identical. To such an extent have the former gained the confidence of shippers in general throughout the world, that of late years, in spite of the enormous additions to their mercantile fleets, they are, by slow degrees, discarding the wood and coal trade between the two countries for more remunerative employment elsewhere.

One of the most serious difficulties British shipmasters had to contend against was, that their competitors, owing to their vessels being so much more cheaply constructed and worked, could afford, it is said, to underbid them to the extent of over 80 per cent. This drawback has almost entirely disappeared, and the rates of freight are about equal, in consequence of the recent great rise in the cost both of shipbuilding materials and labour, and perhaps also of a greater demand for Swedish and Norwegian vessels. The prejudice on the part of Swedish shippers against employing British shipmasters has been partially overcome, but it still exists, and can easily be accounted for, especially as regards the wood trade. The latter, as a rule, are totally ignorant of the language of the

country, unaccustomed to this peculiar branch of trade, and frequently refuse to conform to local usages. Ignorance of the language is not of so much importance in trading with Stockholm and the southern ports as it is with the northern ports, whence nearly all the wood is shipped, for in the former English is very generally spoken, whereas in the latter but few are acquainted with it. In this respect Swedish and Norwegian shipmasters have a decided advantage, being quite as much at home in one country as in the other, since they are compelled to prove their proficiency in English before being granted their certificates as masters. Then as regards the peculiar conditions under which the shipment of wood has to be effected, quick dispatch is of the utmost value for two reasons: first, the shortness of the shipping season coupled with the scarcity of available labour; secondly, the great risk in so changeable a climate of sawn wood being drenched and thereby deteriorated. To load with the least possible loss of time requires both very careful management on the part of the person superintending the shipment, and practice on that of the crew. Mr. Gould here states that the plan is stated to be to have the vessel's hold accurately measured so as to be able to calculate beforehand, with mathematical precision, where and in what quantities each description of wood can be most conveniently stowed. Then the wood is brought to the ship's side in barges, and, according to its measurement and as it is required, each description is at once passed into the place previously allotted to it. By the adoption of this exceedingly simple plan, a very considerable saving in time is said to be effected. It stands to reason that it must be far preferable to the one of allowing the wood to be first put on board just as any ordinary cargo would be, and then to have it stowed away anyhow as circumstances admit. Unfortunately, many British masters are not cognizant of the great advantages of the method above described, and others, not having among their crews anyone able to carry it out, refuse to go to the expense of engaging a native for that special purpose; but even then the unskillfulness of their crews at work of this kind would still tell against them, if they had not had some previous practice.

British masters seldom attempt to get much more than an ordinary day's work out of their crews, and if they do, generally fail in the attempt. Many Swedish and Norwegian vessels, in the course of the shipping season, succeed in making three voyages to and from England. It is doubtful whether British vessels are often able to do as much, for the loss of a very few days may, and frequently does, make all the difference. Yet, within the last two or three years, such has been the demand for shipping, that scarcely any British vessels have had to return from the more northern ports without cargoes. Under these circumstances, it is a matter of constant occurrence that the major part of the running days,

allowed in the charter-parties, for receiving and discharging cargo, are taken up merely in loading in the case of British vessels, although the Swedish shippers may not be the least in fault. However, the masters, if they find themselves unable, after their arrival in Great Britain, to discharge their cargoes within the specified term, almost in every instance claim demurrage. In order to check this abuse, which gives rise to much unpleasant correspondence between the shippers and freighters, and even sometimes leads to costly litigation, Mr. Gould thinks it would be well to take into consideration a suggestion offered by a gentleman of considerable experience in such matters. It is simply that instead of, as at present, lumping together the whole of the running days in the charter-parties of vessels freighted to load wood, it should always be distinctly and separately specified how many days will be allowed for taking in cargo, and how many more for discharging it. Thus masters, if unable to complete loading within the prescribed term, either through want of diligence on their part, or through remissness on that of the shippers, or owing to some unavoidable cause or other, could be compelled to have the case settled on the spot.

A matter of far wider import, since it affects the whole of the British shipping trade in the Baltic, is the want of efficient means of control masters possess over their crews. The men, owing to the system of advance notes, are, as a rule, hopelessly in debt to the ship. They may become ever so unruly and idle, the master has no really effective remedy in his hands. Stopping their wages, or hiring substitutes at their expense, is out of the question, if, as is generally the case, they have already been debited to the extent of the wages they are likely to earn during the voyage for which they have been shipped. Sending them to prison is equally ineffectual, for, besides the trouble, loss of time, and expense entailed on the master by such a measure, idleness in prison is preferred by many to work on board. The evil results of the system of advance notes, as regards seamen shipped for short voyages, have been fully and ably exposed by several of Her Majesty's Consuls. Lastly, the too frequent recurrence of wrecks and casualties among the British shipping in these seas, happily somewhat on the decrease of late, is, in a large measure, to be ascribed to professional ignorance and want of care on the part of the masters. During the shipping season able, and above all, careful navigators have no special cause to dread the narrow seas, shoal waters, and the intricacies of the navigation along the coasts of Sweden. These dangers have, as far as possible, been guarded against by excellent charts, numerous pilot stations, where experienced pilots may at all times be obtained, numberless harbours, and sheltered anchorages to make for in case of need, and lighthouses at some of the most exposed points. Besides, the whole coast line and the adjacent islands are studded with

differently shaped and coloured beacons easily recognised; the more intricate and dangerous channels being carefully marked out with stakes, placed at very short intervals from each other.

HYDROGRAPHIC.

VIGO BAY.—LOS CASTROS DE AGOEIRO, AND ROCKS ADJACENT.

On the 17th November, Admiral Seymour, accompanied by the Captain and Staff-Commander of the *Agincourt*, proceeded in the steam-launch of that ship to the shoal laid down on the Admiralty chart of west coast of Spain, No. 2,548, as Los Castros de Agoeiro. The position assigned to it therein is exactly correct, but the rock is so small, not being larger than a small oval table, that there was some difficulty in finding it in the swell that was running at the time.

There were about three fathoms of water on it at nearly low tide. It bears exactly as laid down from the Boliro o Agoeiro, which is a brown rock about 70 feet high, on the north-east end of which there is a small guano deposit.

The Forçado rock is about 4 feet out of water, square, and very small.

The following are the angles taken when the steam launch was over Los Castros de Agoeiro in three fathoms water :—

Between cape Silleiro lighthouse and the north angle of the fort in Monte Real Bayona, was $84^{\circ} 50'$; and from the fort to cape Scutanto $27^{\circ} 0'$. Bearings at the same time were as follow :—

Mount Faro lighthouse, Bayona islands, N. by E. $\frac{1}{2}$ E. easterly; S.E. point of San Martin island, N.E. by E.; Monte Ferro, S.E. $\frac{1}{2}$ E.; the right shoulder of Ons island just on with the west point of Faro island.

There was considerable sea on, and the angles and bearings as taken from the boat are, perhaps, slightly in error in consequence.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
122	ADRIATIC—Donzella (St. Andrea) Island	Alteration in Light.
123	ADRIATIC—Bianche Point	Alteration in Light.
124	CANARY ISLANDS—Tenerife—Santa Cruz	Re-establishment of Light.
125	CANARY ISLANDS—Gran Canaria—Puerto de la Luz	Shoal Ground near Anchorage.
126	CHINA—Pe-chili Strait—Tong-chau	Establishment of a Light.
127	MEDITERRANEAN—Cartagena—Point Navidad	Establishment of a Breakwater Light.
128	ENGLAND, SOUTH COAST—Royal Sovereign Shoals	Establishment of a Light-Vessel.
129	GULF OF ST. LAWRENCE—Chaleur Bay—Heron Island	Establishment of a Light.
130	JAPAN—Yedo Bay—Haneda Point	Establishment of a Light.
131	JAPAN—Tsugar Strait—Awomori	Alteration in Harbour Light.
132	NORTH SEA—Jade River	Intended establishment of Lights.
133	ADRIATIC—Moriacca Channel—Jablanaz	Establishment of a Light.
130	ADRIATIC—Lossini Island—Porto Cigale	Alteration in Light.
125	ADRIATIC—Veglia Island—Point Voschizza	Establishment of a Light.
126	ADRIATIC—Gulf of Cattaro—Meligna	Establishment of a Harbour Light.
137	WEST INDIES—Barbados Island—Ragged Point.	Establishment of a Light.
128	WEST INDIES—Barbados—South Point	Alteration in Light.
139	WEST INDIES—New Grenada—Savanilla	Exhibition of the Permanent Light
140	MEDITERRANEAN—Tunis—Cape Bon	Establishment of a Light.
141	NORTH SEA—River Ems—Borkum Flat	Establishment of a Light-Vessel.
142	UNITED STATES—Buzzards Bay—Dumpling Rock	Establishment of a Fog-Signal.
143	UNITED STATES—Vineyard Sound—Nobsque Point	Establishment of a Fog-Signal.
144	ENGLAND, SOUTH COAST—Isle of Wight—St. Catherine Point	Alteration in height of Lighthouse.
145	ENGLAND—Thames Entrance—Wallet	Intended Alteration in Buoyage.
146	ENGLAND—Thames Entrance—Maplin Light	Alteration in Light.
147	CHINA—Hong Kong—D'Agullar Cape	Establishment of a Light.

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122.—ADRIATIC.—*Donzella (St. Andrea) Island.*—The light is now a fixed white light showing a red flash at intervals of *fifteen seconds*, instead of thirty seconds, as heretofore.

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MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
122	ADRIATIC—Donzella (St. Andrea) Island	Alteration in Light.
123	ADRIATIC—Blanche Point	Alteration in Light.
124	CANARY ISLANDS—Tenerife—Santa Cruz	Re-establishment of Light.
125	CANARY ISLANDS—Gran Canaria—Puerto de la Luz	Shoal Ground near Anchorage.
126	CHINA—Pe-chili Strait—Tong-chau	Establishment of a Light.
127	MEDITERRANEAN—Cartagena—Point Navidad	Establishment of a Breakwater Light.
128	ENGLAND, SOUTH COAST—Royal Sovereign Shoals	Establishment of a Light-Vessel.
129	GULF OF ST. LAWRENCE—Chaleur Bay—Heron Island	Establishment of a Light.
130	JAPAN—Yedo Bay—Haneda Point	Establishment of a Light.
131	JAPAN—Tsugar Strait—Awomori	Alteration in Harbour Light.
132	NORTH SEA—Jade River	Intended establishment of Lights.
133	ADRIATIC—Moriacca Channel—Jablanaz	Establishment of a Light.
134	ADRIATIC—Lossini Island—Porto Cigale	Alteration in Light.
135	ADRIATIC—Veglia Island—Point Veschizza	Establishment of a Light.
136	ADRIATIC—Gulf of Cattaro—Meligna	Establishment of a Harbour Light.
137	WEST INDIES—Barbados Island—Ragged Point.	Establishment of a Light.
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146	ENGLAND—Thames Entrance—Maplin Light	Alteration in Light.
147	CHINA—Hong Kong—D'Aguilar Cape	Establishment of a Light.

NAUTICAL NOTICES.

122.—ADRIATIC.—*Donzella (St. Andrea) Island.*—The light is now a fixed white light showing a red flash at intervals of *fifteen seconds*, instead of thirty seconds, as heretofore.

123.—ADRIATIC.—*Point Bianche*.—The light exhibited on Point Bianche, Grossa island, is now a fixed white light, varied by a flash every two minutes, instead of every three minutes, as heretofore.

124.—CANARY ISLANDS.—*Tenerife*.—*Santa Cruz*.—A fixed red light, elevated 26 feet above the sea, is now exhibited from a moveable platform at the extremity of the mole at Santa Cruz, replacing that washed away by the sea in 1873.

125.—CANARY ISLANDS.—*Gran Canaria*.—*Puerto de la Luz*.—Information has been received of the existence of shoal ground in the anchorage of Puerto de la Luz. Two casts of $6\frac{1}{2}$ fathoms were obtained from H.M.S. *Resistance* when proceeding out of the anchorage, then one of $7\frac{1}{2}$ fathoms, and immediately afterwards the water deepened to 10 and 11 fathoms; the approximate position assigned to the shoal soundings is, Luz Castle bearing N. $\frac{1}{2}$ W., distant $1\frac{1}{10}$ miles, and Fort S. Catalina N.W. by W., 7 cables.

126.—CHINA.—*Pe-chili Strait*.—*Teng-chau*.—A light is now exhibited from a lighthouse on Teng-chau bluff, Miao-tau-strait. The light is a fixed white light, visible between the bearings of West, through South, to S.E. $\frac{3}{4}$ S.; it should be seen 10 miles. The tower is on the north-east angle of the parapet of the citadel, is about 60 feet high, and painted a light stone colour. Position, lat. $37^{\circ} 50' N.$, long. $120^{\circ} 45' E.$

127.—MEDITERRANEAN.—*Cartagena*.—*Point Navidad*.—A provisional light is now exhibited at the end of the breakwater at Point Navidad, west side of the entrance to Cartagena harbour. The light is a fixed red light elevated 14 feet above the sea, and should be seen 4 miles. The light is exhibited from a moveable wooden frame near the end of the breakwater, but during strong winds between S.E. and West the light will be drawn back 164 yards from the end of the breakwater.

128.—ENGLAND.—*South Coast*.—*Royal Sovereign Shoals*.—With reference to Nautical Notices, No. 154 (September, 1878), and No. 58 (February, 1875), on the intended establishment of a light-vessel to mark the Royal Sovereign shoals:—In conformity with those notices, the light-vessel has been placed in position, and a light exhibited therefrom. The light is a revolving white light, giving three flashes in quick succession, every minute; the time occupied by the exhibition of these flashes is about twenty-three seconds, and the interval of obscurity thirty-seven seconds; it is elevated 36 feet above the sea. The vessel is moored in 12 fathoms at low water springs, three-quarters of a mile southward of the 4-fathom patch, called the Southern head, with the following marks and bearings:—

The lighthouse cliff just open of Beachy head	N.W. by W. $\frac{1}{2}$ W.
Royal Sovereign buoy	... North, westerly 2 miles.
Dungeness point	... E. by N. $23\frac{1}{4}$ miles.

These bearings place the light-vessel in lat. $50^{\circ} 42' 50''$ N., long. $0^{\circ} 26' 45''$ E. The vessel will be distinguished in the daytime by a small ball over the usual one at her masthead. *Royal Sovereign* is painted on her sides. On or about the 20th May, 1875, the Bell buoy, which has hitherto marked this danger, will be removed, and a conical buoy, painted in black and white vertical stripes, and surmounted by a staff and cage, will take its place.

129.—GULF OF ST. LAWRENCE.—*Chaleur Bay*.—*Heron Island*.—A fixed white light is now exhibited from a lighthouse on the east side of Heron island; it is elevated 66 feet above high water, and should be seen 12 miles. The lighthouse, 20 feet high, is a square wooden building, painted white. Position, lat. $48^{\circ} 0' N.$, long. $66^{\circ} 8' W.$

180.—JAPAN.—*Yedo Bay*.—*Haneda Point*.—A light is now exhibited from a screw-pile lighthouse recently erected off Haneda point, Yedo bay. The light is a fixed green light of the fourth order, visible over the bay between the bearings of N.E. by E. $\frac{2}{3}$ E. and S.S.E. $\frac{1}{3}$ E., elevated 40 feet above high water, and should be seen 8 miles. The lighthouse, 60 feet high, is built of iron, and painted white; it is situated about 500 yards inshore of the northernmost black buoy which marks the edge of the bank off Haneda point (Kawi Saki) and stands in 7 feet water at low water. Approximate position, lat. $35^{\circ} 31' 35'' N.$, long. $139^{\circ} 47' 20'' E.$

181.—JAPAN.—*Strait of Tsugar*.—*Awomori Harbour*.—The light is changed from a fixed white light to a fixed red light.

182.—NORTH SEA.—*Jade River*.—For the better lighting of the Jade river, it is intended to establish lights at the following places, viz.:—1. On Minsener sand, a light-vessel with a fixed red light. 2. On Schillyshorn, the north-east point of the mainland, in the vicinity of that place, two lights. 3. At Genins bank, a light-vessel with a fixed white light. 4. At Parel, near the place of that name, a fixed red and white light. Further information will be given when received.

183.—ADRIATIC.—*Morlacca Channel*.—*Jablanaz*.—Two beacon lights are now exhibited at Jablanaz. One of the lights is a fixed white light elevated 47 feet above the sea, and should be seen 12 miles; the other is a fixed red light elevated 33 feet above the sea, and should be seen 2 miles. Position, lat. $44^{\circ} 42' 15'' N.$ long. $14^{\circ} 53' 40'' E.$

184.—ADRIATIC.—*Lossini Island*.—*Porto Cigale*.—The fixed white

light at Porto Cigale, west side of Lossini island, has been changed to a *fixed green light*.

185.—ADRIATIC.—*Veglia Island*.—*Point Voschizza*.—A provisional *fixed white light* is now exhibited, and will continue to be exhibited until the completion of the lighthouse now building, at the extremity of Point Voschizza, Canale di Maltempo. Position, lat. $45^{\circ} 14' 20''$ N., long. $14^{\circ} 35' 30''$ E.

186.—ADRIATIC.—*Gulf of Cattaro*.—*Meligna*.—A *fixed green* harbour light is now exhibited on the outer side of the Lazaretto at Meligna to serve as a guide to the anchorage.

187.—*West Indies*.—*Barbados*.—*Ragged Point*.—A light is now exhibited from a lighthouse recently elected at Ragged point, near the eastern extreme of Barbados island. The light is a *revolving white light* of the second order, giving flashes at intervals of *two minutes*, elevated 218 feet above high water, and should be seen 21 miles. The lighthouse 97 feet high, is situated 300 yards within the extremity of the cliff of Ragged point; it is round, and built of white coral stone. Position, lat. $13^{\circ} 9' 55''$ N., long. $59^{\circ} 25' 35''$ W.

Note.—On account of the prevailing strong current running westward on to the Cobblers, a cluster of dangerous reefs $2\frac{1}{2}$ miles to the south-east of Ragged point:—Mariners are cautioned in closing the land to keep well to the north-eastward of the light.

188.—WEST INDIES.—*Barbados*.—*South Point Light*.—The light has been changed from a revolving white light to a *revolving red light*. The time of revolution remains the same—viz., *one minute*.

189.—WEST INDIES.—*New Grenada*.—*Savanilla*.—In accordance with a previous notice, the permanent light is now exhibited from a lighthouse recently erected near the temporary one, and which it now supercedes. The new light is a *revolving white light*, of the fifth order, instead of a fixed light as heretofore; it is elevated 98 feet above the level of the sea, and in clear weather should be seen from a distance of 16 miles.

140.—MEDITERRANEAN.—*Tunis*.—*Cape Bon*.—A light will shortly be exhibited from a lighthouse recently erected on Cape Bon. The light will be a *revolving red light*, of the first order, attaining its greatest brilliancy *every minute and a half*, visible through an arc of 250 degrees, or between the bearings of N.N.W. $\frac{1}{2}$ W. through west and south to E. by N., excepting where Zembra island intervenes; it is elevated about 450 feet above the sea, and should be seen 29 miles. The lighthouse is situated about 800 yards within the extremity of the cape. Position.

lat. $37^{\circ} 4' 36''$ N., long. $11^{\circ} 3'$ E. Further notice will be given of the date of the exhibition of the light.

141.—NORTH SEA.—*Ems River.—Borkum Flat.*—It is intended to establish a light-vessel on Borkum Flat, off the entrance of the river Ems. The light-vessel will exhibit *three fixed* lights on separate masts; the centre light, on the mainmast, will be a *red* light, and the other two, *white* lights; they should be seen eight miles. The vessel will be moored in about 14 fathoms water N. by W., distant $16\frac{3}{4}$ miles from Borkum lighthouse. Approximate position, lat. $53^{\circ} 50'$ N., long. $6^{\circ} 27'$ E. In the daytime the vessel will carry a black globe on the fore and mizen-masts, and a pyramidal basket-cage on the mainmast. Further particulars will be published when received.

142.—UNITED STATES.—*Buzzards Bay.—Dumpling Rock Lighthouse.*—A fog-bell, sounded by machinery, has been established near Dumpling rock lighthouse, New Bedford harbour. In thick or foggy weather the bell will give *two* blows in quick succession alternately with a *single* blow, at intervals of *thirty seconds*.

143.—UNITED STATES.—*Vineyard Sound.—Nobsque Point Lighthouse.*—A fog-bell, sounded by machinery, has been established near Nobesque point lighthouse, Woods hole harbour. In thick or foggy weather, the bell will give *two* blows in quick succession alternately with a *single* blow, at intervals of *thirty seconds*.

144.—ENGLAND.—*South Coast.—Isle of Wight.—St. Catherine Point.*—It having become necessary to reduce the height of the lighthouse on St. Catherine point, by about 38 feet—on or about the 25th of May, 1875, the light will be exhibited at the lower elevation of 140 feet above the level of high water, and in clear weather will then be seen from a distance of 17 miles instead of 19 miles, as heretofore.

145.—ENGLAND.—*Thames Entrance.—Wallet.*—In consequence of the alterations which have taken place in the sands at the southern end of the Wallet, the following changes in the buoyage will be made as soon as possible, viz. :—Wallet Spitway buoy will be moved E. by N. 2 cables, and will be surmounted by a staff and St. Andrew's cross, instead of a diamond, as at present. Whitaker buoy will be increased in size, and surmounted by a staff and diamond. A new 6 feet can buoy will be placed on the north elbow of the Eagle sand.

146.—ENGLAND.—*Thames Entrance.—Maplin Light.*—Coincident with the alteration in the buoyage of the Wallet, a strip of white light from the Maplin lighthouse will be exhibited so as to cut the Maplin Spit buoy. Due notice will be given when the above changes have been effected.

147.—CHINA.—*Hong Kong*.—*Cape D'Aquilar*.—(*Tylong Head*).—A fixed white light of the first order is now exhibited from a lighthouse on this cape; it is elevated 200 feet above the sea, and should be seen 23 miles. The tower is round, 57 feet high, and built of stone. Position, lat. 22° 12' 10" N., long. 114° 15' 45" E.

HYDROGRAPHIC NOTICES PUBLISHED BY THE ADMIRALTY.

No. 11.—*Newfoundland and Labrador Coasts*.—Hydrographic information relating to the coasts and anchorages of Newfoundland and Labrador has been extracted from the fishery report of Commander Howorth, and the accompanying remarks by Navigating Sub-Lieutenant Oulless, H.M.S. *Woodlark*, 1874, originally printed by the Newfoundland Government.

Nos. 10 and 12.—*Africa, East Coast*.—Information relating to the coast and anchorages between latitude 10° 12' S. and 9° 28' S., including Mikindani and Kiswere bays, and between Cape Delgado and Mnazi bay, in lat. 10° 19' S. By Lieutenant Francis J. Gray, R.N., commanding H.M. surveying vessel *Nassau*, 1874.

CHARTS, &c., Published by the Hydrographic Office, Admiralty, to the end of May, 1875, and Sold by the Agent, J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.

No.	Scale.		s.	d
235	m = 0·4	Arctic Sea :—Davis Strait and Baffin bay to 75° 45' N.	2	6
275	m = 0·65	Arctic Sea :—Northward from Baffin Bay ; Smith Sound, &c.	2	6
276	various	Greenland :—Harbours and anchorages on West coast of	2	0
684	various	Africa, East Coast :—Mto, Mtwara, and Mikindani harbours	2	0
681	m = 8·0	Africa, East Coast :—Lindi river and Mgau Mwanja	2	6
997	m = 7·0	Japan, Yedo Gulf :—Yokoska harbour and F'ka-ura	1	6

Books.

Davis Strait, Baffin Bay, Smith Sound, &c.	1	6
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GENERAL.

THE NAVIGATION OF THE PORT OF MARSEILLES IN 1874.—The captain of the port of Marseilles has published, according to custom, his abstract of the movement of navigation in the various docks of Marseilles. The distinctions of long voyage and coasting are established according to the principles of maritime legislation. The difference between long voyage and coasting navigation is as follows:—The coasting navigation comprises the whole of the Mediterranean, the Black Sea, and all the interior seas, such as the Sea of Azoff, the Suez Canal, the coasts of Marocco as far as the 30° N. latitude, and all the seas of Europe up to the 72° W. latitude. Under these circumstances, all ships going or coming to or from any point in the United Kingdom and the British Isles to any port in the North Sea, Baltic, Sweden and Norway, and Archangel in the White Sea, are coasters. Contrarily, ships going or coming to or from any point in the Red Sea, the Canary Isles, Madeira, the Azores, and Iceland, and all places beyond, are considered to have made the long voyage. It is necessary to bear this in mind, in order to understand the figures following. In 1874 there entered Marseilles from long voyages 439 French ships, representing 202,371 tons burden, and 350 foreign ships with 142,346 tons. Both for French and foreign flags the increase on the preceding year is sensible, the French flag showing an increase of 52 ships and near 12,000 tons; other flags, 94 ships and 54,000 tons. The departures of long voyage ships under the French flag amounts to 438 ships with a tonnage of 195,947 tons; under foreign flags, 363 ships with 146,401 tons. The augmentation for 1874 for departures is proportionate to the increase for entries—viz., 60 ships with 20,000 tons for French flags, and 111 ships, and 60,000 tons for foreign flag. The coasting trade shows a result exactly contrary, there being diminution everywhere. In 1874 there entered no more than 4,694 French ships, instead of 5,080 in 1873, and the tonnage declined from 1,375,468 tons to 1,384,662 tons. The foreign flag fell from 3,519 ships and 804,935 tons to 2,995 ships and 744,548 tons. Of departures in 1874, 4,733 ships and 1,332,500 tons, instead of 5,075 ships and 1,374,747 tons in 1873. Foreign navies furnished 3,112 ships and 793,593 tons, while in 1873 it was 3,501 ships with 774,824 tons. The above resumé shows a commercial movement in the port of Marseilles for 1874 as follows: Entries, 8,478 ships of an aggregate tonnage of 2,423,927 tons, of which 8,054 ships were loaded, and 424 in ballast. Departures amounted to 8,641 ships with a tonnage of 2,468,441 tons; but the departures are less satisfactory than the entries from a commercial point of view, for 2,246

ships left in ballast. In comparing this movement with that of the preceding year, it appears that the entries for 1873 were 9,238 ships, with a total tonnage of 2,448,909 tons—an amount superior both in ships and tonnage. Of this number 8,857 ships arrived with cargoes and 381 in ballast. Departures from the port in 1873 were 9,201 ships with 2,411,882 tons, 6,751 of these ships clearing with cargoes, and 2,450 in ballast.

LIGHTHOUSES AND WRECK-SIGNALS.—Owing to the wreck of the *Schiller*, and to the absence of any means of making it known to the shore by the men in charge of the Bishop Rock Lighthouse, many suggestions have been made, amongst others, that a telegraphic wire should be laid between the Bishop Rock Lighthouse and the land, and that a similar arrangement should be made in the case of all other detached lighthouses. It appears to us that there are four objections to this. The first is, that vessels would more frequently be tempted to approach the lighthouses for the purpose of reporting themselves, and thus actually run into proximity to danger. The second is, that a telegraphic cable would, in such a position among rocks and breakers, be speedily liable to damage and even destruction, and would, at the best, be untrustworthy; the third is, that the occasions when such a wire might be useful would be so extremely rare (for it certainly must not be used for any other purpose than as a distress signal) that from disuse the keepers would have difficulty in remembering how to work it, and the apparatus would be very liable to get out of order; and the fourth is, that a telegraph wire is really unnecessary for the purpose. The Marine Department of the Board of Trade have had manufactured for them by the War Department a new sort of rocket, which the department has named a "call" rocket. It is to be used only when a ship is seen to be in distress, wanting assistance from the shore. At present the "call" rocket has been supplied to light-ships only, but we would throw it out as a suggestion whether it should not be also supplied to outlying lighthouses like the Bishop Rock. It is a day signal as well as a night signal, and is quite distinctive. No one can possibly mistake it for any other rocket or signal. It reaches an altitude of 2,500 feet, carries up with it a very large charge of powder, which explodes with a great noise, and also shows both in its upward and downward course a very powerful magnesium light.

TO CORRESPONDENTS.—*Start Point Light*.—We beg to inform Captain Harrison, R.N.R., that the dark interval between the flashes of this light is 55" in duration, not 45" as Captain H. supposes. The flash is shown for 5", thus making it a minute revolving light.

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ROCKET AND MORTAR LIFE-SAVING APPARATUS.

THE rocket apparatus for saving life from ships stranded and in distress on the coasts of the United Kingdom is, without exception, the most perfect contrivance of the sort that the combined skill of the accomplished seaman, engineer, and artillerist has been able to produce. Its present state of perfection is the result of many years of careful thought and of much expenditure of public time and money. This beautiful apparatus is now placed at no less than 286 stations* on our coasts. At every station it is looked on with confidence by the brave and skilful men who work it. It is regarded as an apparatus that, with proper management, can never fail either to effect a communication when the ship is within range; or to save the persons on board her if they but know how to use it. At 181 stations it is worked by the Coastguard, and at 155 others by voluntary brigades and companies enrolled to co-operate and work under the Inspecting Officer of the district. Foremost amongst all these brigades stands that at Tynemouth, which is under Captain Prowse, R.N., the Inspecting Officer of the Sunderland Division. It is notable no less for its real love of hard work than for its very great efficiency: and for the very complete establishment of bath-room, the apparatus for restoring the apparently drowned, beds for docking rescued people, surgical appliances and medicines, and medical comforts for repairing damages and restoring parting energy, its watch-house, look-out-house, and muster-room, &c.,

* For details of this, and the other particulars, our readers are referred to Parliamentary Paper, c. 1069—1874.

and for its practical success at wrecks. This brigade was the first of the sort ever enrolled in any country, and, with the one at South Shields, which is in no way inferior, does infinite credit to the men of the Tyne. The muster-room is already decorated with head and stern boards, trophies of the victories of peace, mementos of battered ships, over whose hulls the brigade, even to the loss of life amongst themselves, have striven manfully to rescue shipwrecked crews.

The rocket apparatus of which we are writing, and the men who work it, of whom our country ought to be, and is, proud, has already been the means of saving upwards of 6,000 lives in seventeen years. These lives have absolutely been snatched from the open jaws of death, for the rocket is the very last means of escape on which the crews of stranded ships can place hope. The rocket takes its flight through the storm and above the sea when the stranded ship, striking heavily, is going rapidly to destruction amongst breakers, where no human being in the best of lifeboats dare venture. It is right that this last chance of defence of our mariners against seas, storms, and rocks, should be in the hands of the Government, and should be regulated and worked by a State department. Lifeboat Societies, Royal Humane and Shipwrecked Societies, and organizations of that sort can well and properly be left to independent effort, and the Royal National Lifeboat Institution, with its 289 lifeboats, shows how well independent effort succeeds in it; but the mariner's last hope on our tempestuous coasts, the rocket apparatus, with its uniform method of working can only be successful in the hands of cool and well-drilled men, and the system, being international, must be superintended by a State department.

We have stated above that the rocket apparatus can fail only when the ship is out of range, or when the unfortunate creatures on board or her do not know how to use it. It is a curious and instructive, but at the same time a melancholy fact, that, although the Board of Trade have for twenty years caused full instructions to be circulated in pamphlets and placards, and have caused to be printed in the official Log Books of ships and on the backs of many printed forms which sailors must use, and although "Naval Reserve" men are drilled in the use of the apparatus, and masters and mates are examined in it, the very great majority of seafaring persons take no heed of it, or of the instructions furnished them for working it; and so it sometimes happens, that after the brigades and Coastguard men have effected a communication between the ship and the shore, by means of the rocket line, often at great risk, toil, and exposure, every soul on board is lost.

We are led to give a notice of the rocket apparatus the first place in our number for the present month, because we have observed that the Board of Trade have taken further and we hope effective means for

disseminating knowledge of its use, and because we regard it as our first duty to assist in really useful effort to save seamen's lives. The Board of Trade have now, on the suggestion of Mr. J. Forster Spence (by whose exertions the Tynemouth Brigade was chiefly founded), issued metal tablets containing instructions to the crews of ships concerning the use of the apparatus. These plain instructions are illustrated, and it is intended one or more of them shall be placed on board all ships in such a position or positions that the crew and passengers may be able at all times to study them. It will be indeed a culpable thing, if from this time forward life should be lost through ignorance of working the apparatus. From our correspondent at Tynemouth we are given to understand that copies of the tablet have been sent to the Queen. Should that solicitude which Her Most Gracious Majesty always evinces for her sailors, direct that copies of these tablets be placed on board her royal yacht, it will afford an example which we trust her faithful subjects will not be slow in following, so that ere the winter sets in the crews of all our coasters and passenger ships may be in possession of conspicuous information. It will save more life than all the compulsory surveys in the world.

The method of effecting communication by means of the apparatus is by sending a powerful rocket with a line attached over the stranded ship. This line, to which is in its turn attached a tail block and endless fall rove through it, is hauled on board from the shore by the crew. When the crew get the tailed block they make it fast to some part of the ship and the people on shore then haul away at one part of the endless fall,* thereby of course hauling out the reverse part to which is attached the hawser. The crew set up the hawser, and along the hawser (by means of the endless fall or "whip") is hauled the breeches buoy, backwards and forwards, or forwards and backwards, every time anyone gets into it. This at first sight might, to the uninitiated, appear to be a complicated process, but so simple is it really, that the first man is sometimes hauled along within six minutes after communication is effected! Still it must be apparent, that if any means could be devised whereby the arrangement might be still further simplified, whereby, for instance, the first of the present lines (called the "rocket line") could be dispensed with, and whereby the endless fall with the tailed block complete could be sent straight on board the ship from the shore at once, matters would

* To our non technical readers we can best compare this "endless fall" or "whip" to an ordinary window blind cord. The wheel at the end of the roller represents the sheave in the tailed block and the cord itself having no end, represents the endless "whip" or "fall." If one part of the cord is pulled towards the person using it the opposite part must of course go from him.

be simplified and time saved. This idea has struck many persons and is by no means new ; indeed, we gather from a letter which will be found elsewhere in this month's *Nautical*, that it has been under the consideration of the Board of Trade for at least 20 years. The methods as yet proposed for sending off the rove line with the shot or rocket have all possessed serious drawbacks. An important drawback is that no means have been found whereby a double line of adequate strength can be projected by a mortar over a sufficient distance to be of use in most cases of wreck. It is quite easy to send a shot, from a mortar, and a double thin line a fair distance though even then the "Mortar Apparatus," as it is called, is at its very best altogether inferior to the rocket at its very worst ; but to project a shot or block with a double or rove line of adequate thickness and weight the requisite distance, is a problem that has never been solved ; though models have worked very well. There are other objections fatal to any system whereby a rove line and block are thrown over a ship. When, as at present, a rocket is fired over and beyond a ship, the crew on the ship at once haul in the endless fall from the shore : but if the fall block on the "rove system" were thrown beyond the ship, it would have to be hauled in from seaward before it could be set up on board for use. It is obvious that a line rove through a shot could not be worked until the block, through which it is rove, is rigged up in a favourable position on board the ship, and it is also obvious that a block fired *over* a ship cannot be rigged up on board the ship until it is hauled on board from seaward by the crew, and is made clear of all floating and standing wreck, ropes, &c.

The idea of projecting from a mortar a block with an endless line rove through it was publicly brought before the Royal Dublin Society on the 28th January, 1859, by Mr. Thomas A. Dillon, who described it as "a method of improving Manby's mode." Mr. Dillon's statement, made before the Dublin Society in 1859,* was as follows :—

"Immediately after the last wreck at Yarmouth, which took place, as I have said, in October last, I mentioned the present plan to my friend. Lieutenant Elliot, and shortly afterwards obtained from Captain Shears. Inspecting Commander of Coastguards, Dublin District, the use of a mortar and lines, to test it practically, which was done as follows, upon the North Bull, by means of a model consisting of spars and ropes. meant to represent a ship of ordinary size.

"On each side of the mortar we coiled down an end of a long light rope, *the bight of which rope* was rove through a swivel-block attached to the shot which entered the mortar. On discharging the mortar, the line went out in the double, and thus, in conjunction with the barbs

* For Mr. Dillon's very interesting account of its total failure as then proposed. see *Parliamentary Paper No. 238, 1873*, moved for by Sir A. Lusk.

which are usually attached to Manby's shot* and the swivel added as I have mentioned, we had at once an endless rope, stretching from shore to ship; and the swivel block being large enough to bear a stout hawser, we had power to haul out from the shore without any assistance from the ship, men, cradles, life-buoys, or a boat, as the case might be. We tried several modifications of this plan; as, for instance, when the first shot failed to obtain a reliable hold, we sent out a second spring grapple, with a block and endless line rove through it, which by veering and hauling, and playing and coaxing with, we could fasten to almost any rope we liked in the ship; we succeeded, in short, in firing out the endless fall."

Mr. Dillon was doomed to disappointment, for the Inspecting Officer of Coastguard, who was by the Board of Trade instructed to observe and report upon his experiments, reported in 1861 as follows:—

"I have the honour to state that I attended on six different days, and gave him the use of Manby's apparatus and the services of the Coastguard of Clontarf Station; and have also to report that, in my opinion, Mr. Dillon entirely failed in carrying out the object of his experiments—viz., ensuring a means of communication and thereby possibility of saving the disabled crew of a wrecked vessel. As Mr. Dillon seems sanguine of ultimate success, and has informed me that he has written to you officially on the subject, I shall not trouble the Board of Trade by entering into any details of the experiments.—I have, &c. (signed), Thomas Young, Inspecting Commander."

Mr. Dillon, satisfied that the rove rope system in connection with the mortar apparatus was a failure and a danger, gave it up, but now proposes to attain the desired object by an arrangement of rockets; whether he can do it remains to be proved.

The idea of throwing a rove rope from a mortar was afterwards taken up by another gentleman, and in June, 1870, the Admiralty called the attention of the Board of Trade to two inventions; one was an expanding anchor, and the other was a "cone block," with an endless rope rove through it. Both these contrivances were fired from a mortar. The anchor was intended to be useful, amongst other things, for hauling life-boats out through the surf, and the "cone block," with the whip rove through it, was intended, as Mr. Dillon's had previously been designed, to supersede the present method of communicating with wrecked ships on our coasts.†

* Some of these shot were spherical and others cylindrical with one round end.

† See Mr. Dillon's letter on the subject of this similarity. Parliamentary paper quoted above, page 8, letter No. 5.

This double line proposal has lately been pressed forward by the Hon. Captain Maude, Mr. Thomas Brassey, M.P., and other philanthropic gentlemen. From the papers, it would appear that the recent proposal very closely resembles in its most important feature the previous proposal of Mr. Dillon, but there appears to us to have been this important modification. Mr. Dillon used the Manby shot (of which some were fitted with barbs or grapnels, and some were not), and to that he attached a swivel block, with the fall rove through it. On the other hand, the scheme, whose practical efficiency is testified to by the Hon. Captain Maude and Mr. Thomas Brassey, contains a feature which we believe to be new and important, whereby the shot itself (sometimes barbed and sometimes not) is fitted with a sheave, and the fall rove through it, and really becomes what we should call a conical-shot-block.

It appears from the Parliamentary Paper we have alluded to, that the Board of Trade recognised this new feature, and acted in the case of the cone block modification of Mr. Dillon's proposal, exactly as they had done in the case of the original proposal—that is to say, they expressed willingness to receive reports of the trial of a full-sized apparatus. They declined to take any part in trials with a model of it. But in the recent case they seem to have looked on the arrangement with greater favour, for they went further for it than for Mr. Dillon's, and allowed £50 of public money. The fact that the inventor of the cone block system had stated,* that the then existing mortars—viz., the “5½-inch cohorns,” would do for his apparatus, doubtless had great weight in securing such very favourable terms. Having applied to the Board of Trade for the loan of one of those mortars, and a loan of a service “whip,” he undertook to make his “cones” to fit them, and to forward the complete apparatus, as he would use it at a wreck, to Shoeburyness, where the trial was made on the 12th May, 1871.

The trial was made under the superintendence of Col. Elwyn, R.A., on the distinct terms and conditions previously agreed to between the inventor and the Board of Trade, and the result was that, whereas the range of the rocket was 350 yards, the range of the “cone block” turned out to be only 152 yards, giving 198 yards in favour of the existing apparatus. And as Captain Young, R.N., had reported against the practicability of throwing a double line, according to the method proposed in 1861, so the professional officers, who attended the trial at Shoeburyness of the modified arrangement ten years after, that is in 1871, had to report against the practicability of the then proposal. Captain Robertson, R.N., who was Surveyor-General; Captain Ward, R.N., the Inspector to the Royal National Lifeboat Institution; and Commander Theobald, R.N., of the Coastguard at Shoeburyness; as well as Captain

* See the Parliamentary Paper before referred to.

Prowse, R.N., of the Sunderland Coastguard, the latter, after experiments at Sunderland, all reported against it. Captain Robertson's words on the experiments, paid for by the Board of Trade, appear from the Parliamentary paper we have referred to, to have been, that "a mortar and cone apparatus, as described, would prove useless at most of the wrecks that occur on the coasts, and that the present rocket is, in *every* respect, superior." The earlier arrangement had been equally strongly condemned in 1861. As far as we have been able to collect opinions from the Parliamentary papers before us, no one, authorized from position, knowledge, and experience, has pronounced in favour of the superiority of any of the means, as yet proposed, for throwing a double rope instead of a single one over a wreck, and therefore, perforce of circumstances, the Board of Trade appear to be compelled to abide by the present system.

That the subject should claim attention just now, is but to be expected, seeing that at the present moment almost anything proposed with a view to save the life of the sailor, receives the attention of the well intending and leisurely amongst us.

But, alas, we have seen that at the present moment the fertility of inventors and the expenditure of public money, and repeated trials by the Board extending over 15 years, have only succeeded in proposing modifications of existing arrangements that would, in the opinion of the professional advisers of the Board, be practically "useless at most of the wrecks on our coasts." This being the case, the Board of Trade have evidently been well advised in the interests of the safety of the seafaring population, not to disestablish the present successful and much-trusted apparatus, but rather to persevere with it and make its management and use known on board every ship afloat. Seamen have the satisfaction of knowing that this decision against disestablishment has been arrived at solely in their interests, and not until after extended trials have been made and the very fullest and most careful consideration and advice that the practical professional officers of the Admiralty, Board of Trade, the Coastguard, and the Royal National Lifeboat Institution, the officers who alone, from actual experience, are competent to advise, has been given.

OUR COLONIES.—XI.

THE VALUE AND IMPORTANCE OF THEIR FISHERIES.



SCATTERED as our Colonies are over so wide an extent of ocean, they nearly all possess very important coast, river, and lake fisheries. While some of these prolific sources of wealth are as yet entirely overlooked or neglected, and others but partially developed, still, even at present, many of our possessions furnish important products of the fisheries to commerce.

Besides the whale and seal oil, and seal skins, we have such products as cod oil for our manufactures, and cod-liver oil for medicine; isinglass from India, the Straits Settlements, and British Guiana; live turtle from the Ascension and the West Indies, and preserved turtle from Honduras; and tortoiseshell from the Bahamas and other quarters. The cod fishery of Newfoundland, and the coast fisheries of the Lower American Provinces, are also most important. There are even profitable fisheries for sponge at the Bahamas, pearls at Ceylon and at Tinnevely, mother-of-pearl shells at Western Australia, cowries at the Andamans, and various other shells which enter extensively into commerce, for carving, inlaying, and other purposes in the arts and manufactures.

Let us glance at what were the direct imports of produce of the fisheries from our Colonies in 1873, the latest year for which the official statistics are published. These figures are exclusive of those of British take from the Northern fisheries:—

		Quantity.		Value.
Train oil or blubber ...	tuns	9,529	...	£928,981
Spermaceti or head matter	„	545	...	49,990
Seal skins ...	No.	476,022	...	126,939
Cured fish ...	cwt.	218,083	...	298,625

Besides this, there was cod, seal, and other fish oils to the value of upwards of £60,000 from India and British North America, and numerous unenumerated articles, such as sponges, shells, turtle, isinglass, &c.

The fisheries are not only of importance in consequence of the vast amount of wealth that can be drawn from the deep, apparently without diminution, or exhausting its source, but because by this means a body of able and hardy seamen may be found to conduct the commerce of a maritime country during peace, and to become its gallant defenders on the ocean in war. This inexhaustible source of national wealth and greatness appertains in an especial manner to the British possessions in the northern hemisphere, and has long excited the rivalry of the citizens of the New England States, who are aided by bounties granted by the general Government.

The fishing ground situated in British waters reaches from the Bay of Fundy along the southern coast of Nova Scotia around Cape Breton and Prince Edward Islands, and embracing the Bay of Chaleurs, extends to the islands of Anticosti and Newfoundland, and the coast of Labrador and the Magdalen Islands.

In the men that sail the fishing fleets of British North America, we see the elements of a very powerful marine, which will be found invaluable in times of national danger.

There is probably no part of the world where such extensive and valuable fisheries are to be found as within the Gulf of St. Lawrence. Nature has bountifully provided within its waters the utmost abundance of those fish which are of the greatest importance to man, as affording not only nutritious and wholesome food, but also the means of profitable employment. These fisheries are prosecuted as well in the open waters of the Gulf as within every bay, harbour, creek, cove, and inlet, in connection with it.

Quebec possesses, in the River and Gulf of St. Lawrence, an extent of coast of 1,000 miles, where the cod, herring, mackerel, salmon, and other fisheries, are carried on successfully. Whale fishing is prosecuted by vessels fitted out from the port of Gaspé; the cod fishing along the whole shore of Canada; the herring fishery principally at the Magdalen Islands, in the Bay of Chaleurs, and on the coast of Labrador; the mackerel fishing at the Magdalen Islands, along the coast of Gaspé, and in the lower part of the River St. Lawrence. There are above seventy salmon fishery rivers in Lower Canada, which the Government is now fostering with a view to enhance the commerce in this valuable fish; 4,000 to 5,000 barrels of salmon are shipped annually.

In both the salt and fresh water fisheries a point of productiveness is being gained, so that the stock of fish will be sufficient to afford remunerative employment to double the men and craft now employed.

Better and more economical modes of catching are also used, and profitable means of disposing of the fish have been secured. Instead of only being salted and cured, salmon and white fish are frozen, or canned, and sent fresh to the local markets and those of the neighbouring States; 400,000 fresh salmon are now caught annually in those provinces, equal to 8,000,000 lbs. of wholesome and delicious food, the bulk of which is now used as fresh food, instead of salted as formerly.

In Manitoba, lake trout and speckled trout, white fish, sturgeon, pike, &c., are plentiful in the waters flowing into Lake Superior. All the rivers and lakes flowing into Hudson's Bay abound in white fish. They are in immense quantities, and far larger and finer than further east, being found weighing 14 lbs. Probably 120,000 are taken annually in Lake Winnipeg alone, and as many in Lake Manitoba. They are

also found in Mackenzie River, and the lakes of which it is the outlet. Sturgeon are also caught in great abundance of large size in almost all the lakes and rivers of the north-west. They have been taken of 60 to 80 lbs. weight, and 40 lb. is a common weight for them. A considerable quantity of sturgeon oil is manufactured for use in the country. Trout and many other kinds of fish are found, but the white fish is the fish, *par excellence*, of the north-west. It is esteemed the prince of fresh water fish, and affords the staple food of thousands in the remoter parts of the country; it varies in size from 8 lbs. to 14 lbs. Seventeen thousand, nine hundred and forty barrels, valued at 148,520 dollars, were captured in Ontario, in 1872; in Quebec, 8,161 dozen, valued at 6,322 dollars. In Manitoba the selling price is 16s. per 100, and it is calculated that in Lake Winnipeg alone, 80,000 are annually caught by the people living on its shores. These fish are hung up in bundles of a dozen, by means of sticks passed through the tails, and, when sufficiently dried and frozen are taken down and stored.

The growth of the fishery interest of British North America has been steady, if not very progressive.

In 1860, the value of the fish caught in the Dominion waters was about 4,000,000 dollars, and adding 4,400,000 dollars for Newfoundland, and 272,532 dollars for Prince Edward Island, we have an aggregate value of 8,712,532 dollars. In 1866, the value of the Dominion catch was estimated at 6,263 dollars, and that of the product of all the Provinces at 10,837,000 dollars. The actual quantity of fish exported and consumed within the Dominion was estimated in 1870, by the Marine and Fishery Department, at a value of 8,000,000 dollars, and adding as much more for Newfoundland and Prince Edward Island, we have a total of 16,000,000 (£3,200,000).

The yield and value of the Canadian fisheries in 1872 were :—

						Value.	
						Dollars.	
<i>Nova Scotia—</i>						Quantity.	
Codfish	cwts.	525,249	...	2,232,308
Mackerel	brls.	115,833	...	1,624,894
Herring	„	170,657	...	682,628
Salmon	„	6,677	...	144,078
Other fish and fish oils			1,332,927
Total			6,016,835
<i>New Brunswick—</i>							
Codfish	cwts.	81,420	...	346,035
Mackerel	brls.	2,217	...	32,728
Herring	„	124,157	...	496,628
Salmon	„	8,000	...	207,767
Other fish and fish oils			882,301
Total			1,965,459

						Value. Dollars.
<i>Quebec—</i>						
Codfish	...	...	...	cwts.	217,741	911,845
Mackerel	...	...	...	brls.	1,759	17,590
Herring	...	...	...	„	29,069	87,206
Salmon...	...	...	...	„	4,050	64,800
Other fish and fish oils	...	...	...	...	...	238,748
Total						1,320,189

<i>Ontario—</i>						
White fish	...	...	...	brls.	17,490	148,520
Trout	...	...	...	„	7,586	60,688
Herring	...	...	...	„	6,974	41,844
Other fish	...	...	...	„	4,466	21,581
Total						267,633

In this return, salmon, mackerel, and herring are uniformly reduced to barrels from the numbering by pieces, cans, boxes, &c. The above figures give a total of 9,570,116 dollars, or nearly five millions sterling. This is exclusive of Manitoba and British Columbia, and shows an increase of more than 33 per cent. over the two previous years.

About 1,000 decked vessels and 17,000 open boats are computed to be engaged in the fishing business, with about 42,000 men; 200,000 persons in the different fishing communities are mostly supported by this industry. The area of the inland waters of the Dominion is computed by the Census returns to be :—

						Acres.
Ontario	...	...	...	...	...	3,881,729
Quebec	...	...	...	...	...	3,728,176
New Brunswick	...	...	...	...	...	98,870
Nova Scotia	...	...	...	...	...	525,600
						8,234,375

The lineal extent of sea coast is for—

Quebec	...	...	...	...	...	1,164
New Brunswick	...	...	...	...	...	545
Nova Scotia	...	...	...	...	...	1,170
						2,879

The area of the Ontario part of the St. Lawrence and great lakes may be calculated at 27,094 miles, and of the mouth of the St. Lawrence to Anticosti, of the Gulf, of the Bays of Chaleurs and of Fundy, 122,000 square miles.

In the Gulf of St. Lawrence (Quebec), 217,741 cwt. of cod, valued at 911,825 dollars, were captured in 1872; in Nova Scotia, 525,259 cwt., worth 2,232,308 dollars; and in New Brunswick, 81,421 cwt., worth 846,039 dollars, making a total of 824 quintals of cod, valued at 3,490,172 dollars.

The following figures will give some idea of the trade in other members of the cod family, hake, pollack, ling and haddock, of which large numbers are caught :—

						Value. Dollars.
Nova Scotia	...	...	cwts.	114,686	...	344,739
New Brunswick	...	...	„	58,568	...	175,987
Quebec	...	...	brls.	870	...	1,850

Our direct imports of cured fish, nearly all cod, from British North America, in 1873, was as follows :—

						Value.
Canada	...	...	cwts.	48,270	...	£130,247
Newfoundland	...	...	,,	170,106	...	162,678
Prince Edward Island	...	...	,,	4,690	...	5,738

The captures of salmon in 1872 were :—

						Value. Dollars.
Nova Scotia	...	...	brls.	6,690	...	144,195
Quebec...	...	...	„	4,153	...	65,890
New Brunswick	...	...	„	8,291	...	210,886
Ontario	...	...	„	7,586	...	60,688
Total	...	...	...	26,720	...	481,099

The salmon and trout fisheries have greatly increased under careful cultivation. In streams, that till lately were devoid of salmon, these fish are to be found in abundance.

Fishing for mackerel and herring is not pursued to so great an extent as might be the case if the demand were greater and the expense less. The returns for 1872 were :—

	Herring.				Mackerel.		
	Barrels.		Dollars.		Barrels.		Dollars.
Nova Scotia	170,657	...	682,628	...	115,893	...	1,624,894
New Brunswick	124,157	...	496,628	...	2,217	...	32,728
Quebec	29,069	...	87,206	...	1,759	...	17,590
Ontario	6,974	...	41,844		—		—
	<u>330,857</u>		<u>1,308,306</u>		<u>119,809</u>		<u>1,675,212</u>

The fishery for the halibut is very important ; it is mainly followed by Americans, few Canadians embarking in it. The fish is somewhat different from the European fish of the same name. The following was the take in the different Provinces in 1872 :—

				Barrels.		Dollars.
Nova Scotia	...	...	...	4,648	...	23,215
New Brunswick	...	...	...	448	...	2,215
Quebec	...	...	...	411	...	2,055
				<hr/> 5,497		<hr/> 27,485

A fish called the alewife, considered superior to the herring, is taken on the coasts of the Lower Provinces to the extent of 35,000 barrels, valued at 105,000 dollars.

Smelts, sardines, and anchovies, are caught in considerable numbers, though the fisheries are not as fully developed as they might be.

Nova Scotia is widely and deservedly celebrated for the extent and value of its fisheries, and a very large proportion of the population are engaged in, or dependent upon, them. It may be safely averred that no country surpasses it in this respect, and unless it be in the neighbouring province of Newfoundland, even equals it. The cod and haddock frequent the shores and banks which lie off the coast, throughout nearly its whole extent, and in quantity almost unlimited. The mackerel, next in importance, frequent the coast in immense masses. Large captures are sometimes made by means of seines, not unfrequently securing 1,000 barrels at a single haul. Next to the mackerel, the most deserving of notice is the herring. When properly cured, they command a ready market in the United States, West Indies, and the adjoining Colonies.

The returns of the fisheries in Nova Scotia, in 1869, showed—men engaged, 17,557 ; whale boats, 3,588 ; skiffs, &c., 3,793 ; sail boats, 319 ; vessels, 635 ; tonnage, 21,656. The value of the fish taken was 2,500,000 dollars.

In 1861, there were 900 vessels and 8,816 boats, with 14,322 men employed, in the Nova Scotia fisheries.

With the frontage which New Brunswick possesses upon the sea, it is apparent that the facilities afforded for carrying on the fishing business are very great ; and though these facilities have been neglected in the past, it is believed that the apathy which existed is fast being dispelled. The salmon fishery is very valuable. As many as 40,000 salmon have been taken in the course of a single season at the mouth of the St. John, a large portion of which are sent fresh to the United States, and command remunerative prices. At the entrance to the Miramichi, 400,000 lbs. of salmon are annually put up (preserved) for export.

The returns from New Brunswick are imperfect, but as far as they have been given, they show—men engaged, 2,000 ; vessels, 38 ; boats, 780 ; canoes, 139 ; tonnage, 765. The total value of the fish taken in 1869, was 700,000 dollars ; in 1872, it exceeded 1,000,000 dollars, which is double the returns of 1861.

In Prince Edward Island there were, in 1861, 89 fishing establishments ; 1,239 boats owned for fishing purposes, and 2,318 persons fishing. The value of the produce of the fisheries exported is about 1,000,000 dollars. In 1871, the exports were 16,435 cwt. of cod, and 77,868 barrels of mackerel.

The island rises in the midst of waters long famed for the abundance and fine quality of their fish. Although not so plentiful as in years long gone by, they still frequent the shores in vast shoals ; many of them pass up and down the rivers and streams, and afford a healthy occupation and a valuable means of subsistence to a large number of the population. They include many of the richest and most palatable fish to be found in any quarter of the globe.

The fish and fish products exported from Newfoundland, in 1873, were of the value of more than £1,514,000. This was their market value in the Colony, but in the foreign markets in which they were sold they would realize a fourth or a fifth more, and, of course, this return is exclusive of the large local consumption of fish. Codfish constitute the principal item in the list. Taking the annual catch on the banks and along the shores at 2,738,410 cwt., and averaging 50 codfish to the cwt., it is estimated that there are drawn from the waters around Newfoundland 136,920,500 codfish in a year. Besides the fish, the oil obtained from the cod forms a considerable item in the business. About one hogshhead of oil is produced for every 5 tons of fish.

The produce of the fisheries in Newfoundland varies year by year. Occasionally, as many as half a million seals will be taken ; at other times only half this number may be captured. The exports in 1871, which was a good year, were as follows :—

					Value.
Dried codfish	...	cwts.	957,488	...	£816,420
Cod oil unrefined	...	tuns.	3,755	...	101,698
„ refined	...	„	301	...	12,542
Seal oil	...	„	6,943	...	202,504
Seal skins	...	No.	486,262	...	231,244
					<hr/>
					1,310,892

After the cod fishery, the seal fishery is the most profitable branch of trade in the Colony. More than 350 vessels are engaged in it. The seals whelp their young in January and February, on the ice-fields of Labrador,

and this is floated southwards by the ocean currents, and is always to be found on the Coast of Newfoundland after the middle of March. The yield of oil is about 11 gallons per cwt. of blubber.

No coasts or rivers are more abundantly supplied with fish than those of British Columbia. Herrings come in shoals into the harbours in March. In April, the famous houlicans enter the river in millions; they are a very delicate and delicious fish, somewhat larger than the sprat, so full of oil that it is said those caught in the north will burn like a candle. There can be little doubt that they would make excellent sardines; they could be preserved in their own oil. A great many varieties of salmon enter the river in March to October, making their way to a distance of 1,000 miles, even forcing themselves up the streams on the sides of the Rocky Mountains. They supply food for thousands in the interior. Smelt and trout are common. The sturgeon abounds in the rivers and lakes throughout the year. It attains a gigantic size; over 500 lbs. in weight. The fish is excellent, either fresh or smoked.

It is believed that there are extensive cod banks in the Gulf of Georgia. In the northern seas, whales and seals abound. Indeed, the extent and varieties of the fisheries of British Columbia are immense. It is evident that in these fisheries British Columbia possesses a source of immense wealth. Her countless salmon alone must form one day a very important article of export. The salmon fishery of 1874 and 1875 was very successful. The preserved salmon is now exported on a large scale, and has a very high reputation. There was not less than 13,000,000 lbs. barrelled and tinned in 1874, of the gross value of £400,000 sterling. Fish oil, to the value of about £6,000, is also shipped.

The coast is considered to be one of the best fields in the world from whence to start whaling enterprises. The mildness of the climate, as compared with the northern Atlantic, and the sheltered coasts of British Columbia, offer great advantages to whaling companies; of these, three were in operation in 1871. Thirty-two whales were killed, yielding 25,800 gallons of oil. There was one vessel with boats, and two stations with boats—altogether, employing forty-nine hands.

The dog-fish oil catch exceeds in importance that of the whales; 50,000 gallons of dog-fish oil were rendered worth £35 a tun. This branch of industry is steadily progressing.

In former times the whale fishery of Bermuda was one of the most prosperous interests in the whole range of commercial or industrial enterprise. It has sunk to almost nothing. The whales, it is true, may now frequent those seas in diminished numbers; but enough are found every year to remunerate amply a large, continuous, and vigorous business, which is exclusively in American hands. It would be quite practicable for English whalers to share in the profits of this great fishery, and even to find

means of reviving the ancient prowess and success of Bermuda itself in the pursuit. From the middle of March till the middle of June it is in action ; and later in the year, towards the end of July, the sperm whale begins to show itself in the neighbouring waters.

During a couple of months in the spring, the anchovy is swept ashore in remarkable quantities.

The following figures give the return value of the exports of the fisheries of our North American Colonies for 1878 :—

Canada	...	...	...	...	£154,992
New Brunswick	...	...	...	...	70,823
Nova Scotia...	...	...	...	...	717,301
Newfoundland	...	...	...	...	1,514,000
Prince Edward Island	...	...	...	...	200,000
British Columbia	...	...	...	...	406,000

3,068,116

Of any fisheries prosecuted in the West Indian Islands and our African Colonies we know little. Let us therefore pass on to glance at the fisheries of our Australasian possessions.

The Tasmanian waters abound with fish, such as trumpeter, perch, bream, mullet, rock cod, flatheads, and flounders, while, of fresh water fish, there are fine eels, mullets, and blackfish. The successful introduction of English salmon and trout into the colonial rivers—one of the most remarkable achievements of modern scientific acclimatization—will in the course of a few years add materially to the resources of the Colony. To a small extent fresh and dried fish are now supplied to the other Colonies ; but if proper arrangements were made, and a very moderate amount of capital invested, a large business in this way might be done. The Steam Navigation Company's vessels run regularly between the ports of Tasmania and Melbourne, and furnish a ready means of conveying the fish—not only fresh, but if required, alive—the voyage occupying no more than twenty-four hours from Launceston, and about forty from Hobart Town. The insular position of Tasmania, the magnificent harbour, which lies alongside its picturesquely situated metropolitan city of Hobart Town, the numerous sheltered channels, bays, and coves which indent the southern coast, and the great number of rivers which are navigable to a greater or less distance beyond their estuaries, has given to the inhabitants, and especially the youth of the island, a strong tendency to a nautical life, and has led from an early date in the history of the Colony to the systematic prosecution of that bold and adventurous species of industry, whale fishing.

The fishing ground of the Tasmanians reaches from their own shores to the Antarctic regions, and is sufficiently well stocked to attract a large

number of American whale ships, who frequently discharge provisions and refit at Hobart Town. This branch of industry has been carried on in two distinct forms; according to one, ships are fitted out, provisioned, and manned for a cruise of many months in various parts of the South Seas, expressly with a view to hunt and capture whales, and make prize of their oil, and the whalebone to be obtained in the case of the black whale; according to the other, the whale was only hunted along the shores of the island at the season when natural instincts led them to seek ease and retirement in quiet and secluded bays or along sheltered shores. Bay-whaling, as the latter branch was termed, was prosecuted by boats' crews, furnished with every appliance for the chase, and for "trying out," as it is technically called, and placed at fixed points upon the coast.

The competition was of the most exciting kind. Twenty-one boats have started in chase at one time from the look-out at Recherche Bay, and twenty-four whales were secured by one boat in one winter. For each whale captured, a notch was cut in the loggerhead, and a headsman was as proud of his notches as an Indian warrior of his scalps.

Messrs. M'Lachlan and Young in one season secured 800 tuns of oil, and a proportionate quantity of bone. Four whales have been secured by one boat in one day. Bay-whaling being so remunerative, sperm whaling was almost neglected. The constant harassing and destruction of the whales, and the killing of the calves, had the effect of either exterminating them, or of causing them to leave the shores. In 1843 their numbers had declined, and in 1847 bay-whaling may be said to have died out. This important business employed for six months of the year a great number of men, who in the summer engaged themselves in agricultural and other pursuits.

On the decline of bay-whaling, ships were fitted out to prosecute sperm whaling. The whaling fleet, just before the discovery of gold, numbered 40 sail of vessels carrying 200 boats, 2,000 tuns of casks, and crews numbering, in the aggregate, 1,000 men. Great success attended the whale ships, and many splendid voyages were made. The largest take in the shortest time was that of the *Girecian*, when commanded by one of the most noted colonial whalers, Captain John Mason, who secured in three days whales which, when tried out, yielded 39 tuns of oil, 10 tuns being sperm. The discovery of gold in 1851 dispersed the noble colonial fleet of whalers, but in 1862 it again numbered 25 ships.

The whaling vessels from the port of Hobart Town for some years proved a not unimportant colonial marine of small craft, returning as they did richly laden with the spoils of the deep. In former times whaling was vigorously pursued. The first notice met with of export of oil from the Colony is an entry of 726 tuns in 1822. The value of the

produce in 1837 is stated to have been £135,210 ; in 1838 to £121,270. In 1839 there were 26 vessels of 3,146 tons employed, and the value of the take of oil and whalebone was £119,113.

In 1857 there were 28 vessels prosecuting whaling out of Hobart Town belonging to colonial owners. They carried in all 84 boats, and employed 630 men. The amount of capital invested was about £130,000, and in the previous year there had been landed at Hobart Town over 800 tuns of sperm oil, the lowest value of which was £64,000. Foreign whalers are now infrequent. The quantity of sperm oil brought into port by colonial whalers in 1858 was 612 tuns. The expense of fitting out a whaler in that quarter is from £1,500 to £3,000, but the pursuit is uncertain. Sometimes the vessel may return from her speculative voyage clean, that is, without having captured a whale ; at others she may return with oil and bone to the value of £5,000 or £6,000.

The total value of the oil and whalebone obtained in the three years 1856, 1857, and 1858, exceeded £200,000. In sperm oil alone the exports were—1856, 949 tuns ; 1857, 643 tuns ; 1858, 608 tuns.

In 1838, American and French whalers cruising in the vicinity of Cape Leeuwin captured, at one onslaught, a school of whales which yielded about 10,000 barrels of oil, estimated in value at £25,000 ; not a single British or colonial craft being present to share in the gains. In February, 1845, several American vessels encountered and captured a considerable number of whales at Champion Bay in the 27th degree of S. lat., about ten miles from the shore—their operations being distinctly seen by some colonists from land. The yield of oil was on this occasion upwards of 6,000 barrels, estimated in value at about £16,000.

In October, 1857, American, Dutch, and French whalers, cruising off King George's Sound, took prizes of oil amounting to 12,000 barrels, in value about £28,000. These various captures were exclusive of extensive ones made by the same vessels in their cruises further out at sea, and being only isolated occurrences amongst many of a similar kind that might be named, forcibly illustrate the anomaly that British enterprise, hitherto so active and vigilant, should permit foreigners to approach the very threshold of British territory, and carry away wealth which is so easily within its own grasp.

In the year 1842, after twenty years of success in bay-whaling, the whales became shy of approaching the shores of Tasmania, and the enterprise since then has been conducted in larger ships. In the winter time the whaling ground is off the coast of New Zealand, and in the summer on the coast of Tasmania. In the years 1840-43 the ports were visited by large numbers of French whalers, owing in a great measure to the bonus then granted by the French Government for every tun of oil

brought into France by French vessels. This bonus has been discontinued, and the visits of foreign whalers are now infrequent.

In 1848 there were 38 whaling vessels of 7,260 tons belonging to the port of Hobart Town. These landed 643 tuns of sperm oil, and 435 tuns of black fish oil, of the export value of £50,172. Oil then fetched a high price in the London market, and the trade proved profitable. But the reduction in the price of oil and the scarcity of fish led to losses, and to the withdrawal of most of these vessels from the trade.

The following shows the number of whaling vessels belonging to Hobart Town, arriving in the years named, with the quantities of oil landed from them :—

Year.	Whalers arrived.	Takes of Sperm Oil.
1855	12 ...	511 tuns 80 gallons.
1856	24 ...	862 „ 220 „
1857	22 ...	615 „ 233 „
1858	22 ...	623 „ 2 „
1859	19 ...	486 „ 227 „
1860	22 ...	447 „ 212 „
1861	18 ...	652 „ 258 „
1862	18 ...	697 „ 211 „
1863	12 ...	92 „ 217 „
1864	10 ...	351 „ 21 „
1865	5 ...	352 „ 0 „

This was all sperm oil, but there was also some black fish oil taken, and the average of the ten years' take landed from these vessels would, consequently, be something like $41\frac{1}{2}$ tuns from each. The rates at which this was purchased and shipped in large quantities—say, of from 100 to 200 tuns, have ranged for the years above named, so far as can be ascertained, from £60 to £100 per tun. In 1855, it was purchased and shipped at £90 to £95 per tun, but in 1864 at £58 to £60 only. That of itself would have been a sufficient reason for the withdrawal of vessels from the trade, had none other existed, but the scarcity of fish, and the want of better management on the part of those entrusted with the vessels, also contributed largely to this.

Sperm oil having of late ruled at very high rates, ships have again been fitted out, and, by the latest accounts, the number at present engaged in this important trade is eight.

No whaling vessels now hail from Adelaide, Melbourne, or New Zealand. In 1860, twelve whaling ships belonged to Sydney, and now there are some engaged in the trade.

In Victoria, not only around the great inland sea-lake of Port Phillip, but the crowded population of the capital, but in outlying ports and

produce in 1837 is stated to have been £135,210 ; in 1838 to £121,270. In 1839 there were 26 vessels of 3,146 tons employed, and the value of the take of oil and whalebone was £119,113.

In 1857 there were 28 vessels prosecuting whaling out of Hobart Town belonging to colonial owners. They carried in all 84 boats, and employed 630 men. The amount of capital invested was about £130,000, and in the previous year there had been landed at Hobart Town over 800 tuns of sperm oil, the lowest value of which was £64,000. Foreign whalers are now infrequent. The quantity of sperm oil brought into port by colonial whalers in 1858 was 612 tuns. The expense of fitting out a whaler in that quarter is from £1,500 to £3,000, but the pursuit is uncertain. Sometimes the vessel may return from her speculative voyage clean, that is, without having captured a whale ; at others she may return with oil and bone to the value of £5,000 or £6,000.

The total value of the oil and whalebone obtained in the three years 1856, 1857, and 1858, exceeded £200,000. In sperm oil alone the exports were—1856, 949 tuns ; 1857, 643 tuns ; 1858, 608 tuns.

In 1838, American and French whalers cruising in the vicinity of Cape Leeuwin captured, at one onslaught, a school of whales which yielded about 10,000 barrels of oil, estimated in value at £25,000 ; not a single British or colonial craft being present to share in the gains. In February, 1845, several American vessels encountered and captured a considerable number of whales at Champion Bay in the 27th degree of S. lat., about ten miles from the shore—their operations being distinctly seen by some colonists from land. The yield of oil was on this occasion upwards of 6,000 barrels, estimated in value at about £16,000.

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In Victoria, not only around the great inland sea-lake of Port Phillip, but for the crowded population of the capital, but in outlying ports and

sequestered coves, families singly, and in clusters, draw their whole subsistence from the fisheries. Queenscliff, alone, musters above 80 registered boats. The total number belonging to the Hobson's Bay district amounts to nearly 500, and all of them are busily employed.

The general idea that the Southern Australian seas are inferior in piscatory resources to the colder waters of Europe seems to be wholly unfounded. At proper seasons of the year, and where reasonable precautions have been taken, and the close months observed, the creeks and estuaries are leaping with fish. On the sandy pavements of Bass's Straits, at a depth of many fathoms, but not more than is habitually swept by the mariners of Devonport and Brixham, armies of soles and flounders feed at will, since the trawl has not reached them. So far as the bounty of Nature goes, fish in Victoria should be as plentiful as in Kamschatka, where the law forbids any dog having the roes of more than six salmon given to it in a day. Yet there is scarcely any part of the civilized world where fish is at such a price.

The seas around New Zealand abound with a variety of valuable fish. Amongst these may be named the hapuka (a very large species of cod), the kingfish, frost fish, butter fish, red schnapper, moke, barracouta, kawai, sole, dory, flounder, and many others, all in considerable quantity, and of delicious flavour; besides which, shoals of mackerel and pilchards occur during certain seasons of the year. Oysters, mussels, crayfish, and other mollusca and crustacea, of great value and of excellent quality, abound, requiring only proper systematic culture to become a source of wealth to the Colony. There is no doubt, in fact, that the New Zealand fisheries, which have hitherto been little looked after, but are now being protected under legislative enactments, will become of considerable importance with the spread of trade and intercourse.

The whale fishery of New Zealand formerly employed a great number of persons, and a large amount of capital was embarked in the pursuit. Whaling stations were established at various parts of the coast, from the Bay of Islands at the north of the Northern Island to Jacob's River and Dusky Bay, at the south of the Middle Island. The principal whaling depôt at the present time is at Russell, in the Bay of Islands, but only as a rendezvous for whaling ships, which are almost entirely American vessels. A few small whaling establishments survive along the coast, but the pursuit is now of little importance. In 1853 the value of the whale oil shipped from the Colony was £22,275; in 1864 it had dropped below £3,000.

Specimens of ambergris are occasionally taken from whales caught off the coast. Ambergris is a concretion from the intestines of the sperm-ceti whale, and is a product of disease, as it is not found in the healthy animal. It is sometimes found floating on the sea, and is occasionally

extracted from the rectum of whales in the South Sea fishery. The masses as met with weigh from two to twenty ounces, but occasionally large pieces have been found weighing ten or twelve pounds. Ambergris, from its value for perfumery, fetches a high price, from twenty to forty shillings per ounce. It has a grey-white colour, often with a black streak, has a strong but agreeable smell, a fatty taste, is lighter than water, melts at 140° Fahr., and contains 85 per cent. of the fragrant substance called ambreine.

Ambergris is occasionally found on the shores of some of the Bahamas Isles; two pieces brought £140 each at Nassau, New Providence, in 1873. Much ambergris is taken to Mecca by the Hajjis, on their annual pilgrimage, probably for use in fumigating the holy places. Eighteen pounds, valued at £360, were exported from Morocco in 1873.

In a recent official account of the Province of Otago, it is stated that the fish, great and small, which abound in the ocean around the coasts of the Province, have hitherto contributed very slightly to its prosperity in comparison with what they might have done. Strangers have been profitably pursuing in those waters the trade of whaling, and thus carrying away the profits which should have accrued to Otago. To organise and fit out a thoroughly efficient fleet of whalers would cost a comparatively small sum, as vessels and crews are at command. The suitability of the port for this trade has from the first been recognised, and in former times was made good use of; but now, when the facilities it offers have been greatly increased, the trade has dwindled down to catching a few whales at the mouths of the harbours by means of whaleboats.

It is proved that the whales have become much more numerous of late; and if regulations were enacted and enforced against the indiscriminate slaughter to which they were subjected, they might yet become as plentiful as formerly.

Sealing also as a kindred occupation merits notice. A few boats are at present engaged in this trade, chiefly hailing from the southern ports; but it is capable of considerable extension, the oil and skins yielding a good profit, and finding a ready market. Curing small fish might be made a sure source of wealth to a large number of fishermen. Fish are very abundant, and although somewhat different from those which frequent the British and Newfoundland banks, are, when properly cured, of first-rate quality, and there is a market for any quantity in adjacent countries. The method of curing adopted in Newfoundland might be suitable for some of the kinds of fish, the cost of salt being saved, as it can be obtained by evaporation, at a cost less than that of the imported article.

At Island Bay, three miles from the city of Wellington, there is a splendid opening for a fishery and fish-curing establishment. The number

of fish to be caught is practically unlimited, and the curing process can be cheaply accomplished. The total demand for the cured fish has always much exceeded the supply, and were the enterprise to be established on a larger scale, any amount of the cured article could be disposed of elsewhere. The Pelorus and Queen Charlotte Sounds, in the Marlborough Province, would also form admirable stations for fish-curing on a large scale. The herring fishery offers every inducement for a profitable investment. At present, although the industry is not prosecuted to any great extent, the Pictou bloaters are famous in all parts of the Colony.

In conclusion we must say a few words about the fisheries of India and the Eastern Colonies. Of any fisheries carried on at Mauritius, the Seychelles, and Ceylon we have no special information.

The pearl fisheries in the Straits of Manaar and Tinnevely yield, when prosecuted at certain intervals, a good revenue.

One product, isinglass, is imported from India to the extent of 500 cwt., valued at £6,000, and from the Straits Settlements 1,000 cwt., valued at £18,000. Besides this extensive sale in the European markets, there is always a constant demand in China for Indian isinglass. As it is, our own possessions furnish at present nearly one half of the isinglass we require.

There are shark fisheries at Bombay, Kurrachee, Malacca, Arracan, and other parts of India. Many thousands of these fish are taken for the oil obtained from the liver, and for the fins which are considered a food delicacy by the Chinese. A good deal of fish oil is also obtained from the skate, seer, and other fish.

The bazaars in Calcutta are always stocked with an ample supply of dried fish. Great store is laid on salted fish, which the very lowest classes endeavour to procure to flavour their miserable meal of inferior grain.

In India every river, stream, puddle, and even roadside ditch, swarms with minute fish as soon as replenished with water. Every conceivable ingenuity for their capture is brought into request, cast nets, drag nets, round nets, stake nets, purse nets, and baskets are the most common. Rod fishing is greatly pursued from the shore and from boats, which are like the coracles in England. Night lines are in much request. Fish is an immensely important article of diet throughout India, and the Indian fisheries under good and sufficient conservancy are able to supply most amply quantities of fish for all classes of the population. It is not necessary to enumerate all the principal fishes which are sought for, the oolum or sable fish, the cockup, the roll fish, black and white pomfret, and the bummaloh, which under its native name of "Bombay duck," is even found in the dried state in our London shops.

The mango fish of Calcutta is generally supposed to gain much of its

high flavour from feeding on the corpses of fat Brahmins, yet there are people to be met with who have a distaste for fish so nurtured.

While it must be admitted that in too many instances our colonists have not engaged in these pursuits with the energy and enterprise which was to have been expected considering the natural advantages they possess, still there are signs of progress in the protection of the fisheries, in better legislation on the part of most of the colonial legislatures, in the investment of capital, and in the building of a superior class of vessels for the prosecution of this industry.

ROYAL OBSERVATORY, GREENWICH.

THE following is an extract from the Report of the Astronomer Royal to the Visitors, read on the 5th of last month. Many of our readers, we are sure, will be interested and instructed by its perusal :—

“The Report which I have now read is the fortieth of its class which I have had the honour to lay before the Board of Visitors. During the time to which they apply, the constitution of the Observatory, personal and material, has been greatly changed. Only one member of the Board of Visitors, I believe, remains as witness of my first proceedings. There is not now a single assistant, or a single instrument in use (for even Shuckburgh’s Equatoreal is not employed as a graduated instrument), of those which formed the establishment of 1835. The contemplation of this long period and of these changes induces me to look both backward and forward on the objects of the Observatory and the mode of carrying them out.

“The Observatory was expressly built for the aid of astronomy and navigation, for promoting methods of determining longitude at sea, and (as the circumstances that led to its foundation show) more expressly for determination of the moon’s motions. All these imply, as their first step, the formation of accurate catalogues of stars, and the determination of the fundamental elements of the solar system. These objects have been steadily pursued from the foundation of the Observatory; in one way, by Flamsteed; in another way by Halley, and by Bradley in the earlier part of his career; in a third form by Bradley in his later years, by Maskelyne (who contributed most powerfully both to lunar and to chronometric nautical astronomy), and for a time by Pond; then with improved instruments by Pond, and by myself for some years; and subsequently, with the instruments now in use. It has been invariably

my own intention to maintain the principles of the long-established system in perfect integrity; varying the instruments, the modes of employing them, and the modes of utilising the observations by calculation and publication, as the progress of science might seem to require.

“While instruments of the same class, but of increased power, have been substituted for those which I found here, three novel constructions have been introduced; the lunar altazimuth, the reflex-zenith-tube, and the chronograph; and, for a special investigation, the water-telescope (now dismounted). I omit mention of auxiliary instruments. To utilize the observations, the numerical reductions for each current year have always been maintained in the most perfect state that I could devise. From these, elaborate star-catalogues (now in frequent demand) have been formed from time to time. And, for connecting the observations of the moveable bodies of our system in a complete and homogeneous series, beginning at 1750, first the planetary observations and secondly the lunar observations of my predecessors have been reduced, and orbital elements have been corrected. The lunar reductions are probably the greatest single work ever undertaken in astronomy.

“This portion of our labours may be considered as applying to the combined subjects of astronomy and navigation. But there are also, peculiar to astronomy, the photoheliography and spectroscopy lately introduced. And, peculiar to navigation and related subjects, there are the investigation of the laws of magnetic disturbance in iron ships, and the correction of the compass by methods now used in the commercial navies through the world; the maintenance of magnetic observations; the incessant attention to chronometers; the extensive dissemination of accurate time-signals; and the daily dropping of a time-ball at Deal.

“The subject of meteorology, which has been followed for many years, is scarcely connected with the two great heads of astronomy and navigation, and hardly deserves the name of a science. It is, however, in great popular request.

“Mechanical self-registration of some meteorological phenomena was introduced by me shortly after the commencement of my residence. Since that time the practical arts of photography and galvanic communication were invented, and they were quickly made available in many of our operations.

“In this increase of occupations, the annual expenses of the Observatory have increased, but in a much lower proportion than the work done.

“Experiments have been made, bearing on cosmical physics, by Maskelyne for the attraction of Schehallien, and by myself for the vibrations of pendulums in mines. Preparations have been made for observations of eclipses and of the Transit of Venus. Assistance has

been rendered to the Government in training officers for such services as tracing national boundaries, &c., and in reference to national standards.

"The lunar theory, though most intimately connected with the highest interests of astronomy, scarcely presents itself to me as a work of the Observatory.

"Turning now from the past to the future, I see little in which I could suggest any change. If it should ever be necessary to make any reduction, I should propose to withdraw meteorology, photoheliography, and spectroscopy; not as unimportant in themselves, or as ill-fitted to the discipline of the Observatory, but as the least connected with the fundamental idea of our establishment. In the nature of addition, I will indicate one practical point. I much desire to see the system of time-signals extended, by clocks or daily signals, to various parts of our great cities and our dockyards, and above all by hourly signals on the Start point, which I believe would be the greatest of all benefits to nautical chronometry.

"Should any extension of our scientific work ever be contemplated, I would remark that the Observatory is not the place for new physical investigations. It is well adapted for following out any which, originating with private investigators, have been reduced to laws susceptible of verification by daily observation.

"The National Observatory will, I trust, always remain on the site where it was first planted, and which early acquired the name of 'Flamsteed Hill.' There are some inconveniences in the position, arising principally from the limited extent of the hill, but they are, in my opinion, very far overbalanced by its advantages.

"G. B. AIRY.

"Royal Observatory, Greenwich,

"May 27, 1875."

BARBUDA ISLAND, ANTILLES.—Statements having been made as to the inaccuracy of the Admiralty Chart of the Island of Barbuda (one of the Antilles), in respect of the Palaster Reefs, which were alleged not to be marked thereon, Navigating Lieutenant J. J. Hoskyn was detached from H.M. *West India Survey*, with instructions to proceed to Barbuda to examine the reefs in question. The result of this survey has been to prove satisfactorily that the allegations are incorrect, and that the reefs in question are in every way well defined and placed on the special chart of Barbuda, and that the chart is in all respects correct.

KURRACHEE HARBOUR.

LOSS OF THE "DIADEM."

[For the information of our readers, and in the general interest of navigation, we make public the following abridgement of the report of a Court of Inquiry, held at Kurrachee, into the loss of the *Diadem*.]

THE *Diadem* is a ship of 1,005 tons, which left Bombay for Kurrachee, in ballast, on the 22nd January, being chartered to convey railway material from this port to Rangoon; her draught when loaded is 22 feet, in her present voyage her draught was 13 feet 6 inches; she is not insured.

On the 28th January at noon she was by observation in latitude 22° 42' N., longitude 66° 33' E., fully 90 miles from any shore; the weather was fine, the wind light, the sea smooth, and the course steered N.E. by N. to N.N.W., a perfectly safe one, which, at the vessel's rate of sailing could not have brought her nearer than 25 miles of the coast by the following morning. Casts of the lead were taken at 3.30 p.m., and no bottom found at 55 and 60 fathoms.

Before daylight on the 29th, between 4 and 5 a.m., the vessel grounded on a mud bank, off one of the mouths of the Indus, marked on the chart "Gobbah," in latitude 23° 56' N., longitude 67° 31' or 67° 29' E. The soundings then taken were 15 feet with soft mud bottom.

By dead reckoning she had then made only 63 miles since noon of the 28th, but it was found that she had drifted some 27 miles out of her course eastward; this is attributed to a strong south-easterly current which prevails on that coast, of which the captain had no knowledge, it not being shown in the chart, and this being his first voyage in these latitudes. There appears to have been no indication that the vessel was so close to shore before she took the ground, though a good look-out was kept, except that the look-out forward says he thought he heard the sound of surf in the distance a few minutes before, and told the chief officer whose watch it was; but the sea being smooth and the shore low, this seems to us doubtful; but for the set of the current above referred to, the course steered was a proper and perfectly safe one, and could not have carried the vessel so close inshore. Captain Parker's evidence further shows that the banks at the mouths of the Indus have extended eight or nine miles seaward since the last survey before that made by Captain Stiffe in 1867, who found then that they had extended fully five miles. Captain Harrison's chart is dated 1868, by James Imray and Son, and is considered one of the best to be had as a general chart.

After the vessel grounded, every exertion was made to get her off, but without effect ; there being no time nor sufficient wind to tack or back the vessel. The second mate was then sent to the master's attendant at Manora for assistance. Captain Parker and his assistants proceeded at once in the steam tug *Manora* to the stranded vessel, and with some difficulty succeeded in towing her off. On the 2nd of February, without any injury, the current, Captain Parker says, was so strong that it was with great difficulty the tug could be kept in the proper direction to tow the ship off. The ship made no water, and since arrival in port she had been surveyed and found to be quite tight, and to have sustained no damage. But for the prompt assistance rendered by Captain Parker, however, the vessel would have gone to destruction ; and we have much pleasure in being the medium of conveying Captain Harrison's thanks to that officer and all his assistants for their exertions on the occasion in getting her off.

We are of opinion that the stranding of the *Diadem* was caused by the set of a strong easterly current off the mouths of the Indus not shown in the charts or any sailing directions of the coast, and of which Captain Harrison was consequently ignorant, and that, but for this circumstance, the course steered was a perfectly safe one. It would have been more prudent had the lead been kept going every hour and the log hove every two hours during the night, while the ship was off this dangerous coast, but being 90 miles off by last observation, and believing, as he had reason to do, that he could not approach nearer than 25 miles before daylight on the course he steered, and according to his dead reckoning, we think Captain Harrison reasonably considered such precaution unnecessary ; and here be it remarked that he is an experienced old navigator, having been 40 years at sea, and commanded various vessels, from the owners of which he holds very creditable testimonials, and never had an accident before. We therefore do not think that Captain Harrison is at all to blame for the mishap.

There are, it appears, printed directions issued from the master attendant's office for approaching the port, the coast of Sind, and Indus banks ; but these do not appear to be generally known, or so widely circulated or so readily procurable as they should be ; and we would suggest that copies should be supplied to every vessel entering the port ; and also be made available at all places where charts are usually sold. Even these directions, however, do not give particulars as to the set of the currents on the extension of the banks off the mouths of the Indus, but merely state that the set of the tides and currents off these banks is uncertain, and the land low and barely visible in clear weather from the outer edge of the banks. These directions we consider should be made more full and clear and placed within the reach of all shipmasters.

In conclusion, we would respectfully draw attention, and add our recommendation to the suggestion made by Captain Stiffe in his Report on the Survey of the Indus banks in 1867, that in view of the great extension and constant changes of these banks, periodical surveys of their outer edge should be made not less often than every five years in the interests of navigation.

(Signed) F. GIBBONS, City Magistrate.

(Signed) R. PYCROFT, Commander Ship *Peter Denny*.

Of these directions we have obtained a copy which we reprint as follows :—

NOTICE TO MARINERS.

DIRECTION FOR THE KURRACHEE HARBOUR LIGHTHOUSE.—Lat. of light-house on Manora point, $24^{\circ} 47' 21''$ N., long. $66^{\circ} 58' 15''$ E. The light is a fixed one, 120 feet above the sea-level, visible in clear weather 16 miles; in hazy weather, prevalent during the south-west monsoon, about 7 miles. Present light very inferior. A dioptric light of the second order recommended.

TIDES.—High water, full and change, 10h. 30m. Average rise and fall, spring tides, 9 ft. 6 in.; average rise and fall, neap tides, 8 to 4 ft. Depth of water in entrance channel at high water : spring tides, 29 ft.; neap tides, 24 to 26 ft.

DRAUGHT OF VESSELS ENTERING OR LEAVING PORT.—Vessels with a draught not exceeding $21\frac{1}{2}$ feet can now enter and leave the port without difficulty or delay during all seasons of the year. During the fair season, from October to 15th May, vessels with a draught not exceeding 24 feet can now enter and leave the harbour. Fixed moorings are placed for such vessels.

TIME OF TIDE FOR ENTERING PORT.—Sailing vessels should enter port on the ebb-tide. Steamers can enter either flood or ebb, and stand at once into port. Masters of ships should not, under any circumstances, attempt to enter the harbour without a pilot.

HARBOUR IMPROVEMENTS.—A red light is exhibited at the outer extremity of the breakwater. Among the extensive works executed, a breakwater has been built, running out from Manora point in a south-by-east direction to a distance of 1,500 feet, into 6 fathoms of water, this affords complete shelter to the entrance channel during the south-west monsoon; also a channel has been opened through the bar, with a depth of 20 feet at low water spring-tides 500 feet in breadth; the channel is marked by buoys, and these on entering should be kept on the port side about 150 feet.

Note.—A mail steamer arriving off the port at night, and requiring a pilot, should fire two guns.

APPROACHING THE PORT.

COAST OF SIND.—INDUS BANKS.—The Coast of Sind below the parallel of 24° north lat. should be approached with great caution ; too much attention cannot be paid to the lead, more especially in passing the Banks of the Indus. Banks of the Indus have extended about 10 miles to the southward since 1856. No sailing vessel should come nearer this coast than 20 fathoms by night, or in rough weather, or under 12 fathoms by day in fine weather. The tides during the springs are strong ; the flood sets south-east and ebbs to the north-west. From February to the end of the monsoon a strong south-easterly current is experienced, running at a rate of from 15 to 40 miles a day. During the south-west monsoon, sailing vessels should make Ras Muari (Cape Monze), which is 18 miles west-half-north from Manora lighthouse, and keep to windward of the port if the weather is thick, or if the tide does not suit for entering the harbour. Allowance must also be made for a strong set to the south-east, which prevails, more or less, during the south-west monsoon. Do not bring Manora point to the southward-of-east, or go under 15 fathoms near Cape Monze. Masters of ships should endeavour to make the port at daylight, and can with safety approach into 8 fathoms to about 2 miles distance from the lighthouse, keeping it, in any bearing, from north-east to north, and heave-to for a pilot.

ANCHORAGE IN THE ROADS.—From June to the middle of September, ships should not on any account anchor, but stand off and on, keeping the lighthouse bearing from north-by-east to north-east 1 to 2 miles distant, until boarded by a pilot or directed by signal.

September to end of March.—Anchorage lighthouse north-by-east to north-north-east, distant 1 mile 7 fathoms.

April and May.—Lighthouse north-north-east to north-east, distant half-a-mile, 8 fathoms.

GEORGE C. PARKER, Lieut. I. N.,
Acting Master Attendant, Kurrachee.

Master Attendant's Office, Manora,
21st February, 1875.

ARCTIC EXPEDITION OF 1875.

IN our April number we gave an outline of the Papers presented to Parliament on the subject of an expedition which has created more public interest than any that has left our shores for very many years, and we do not remember one that has so stirred the heart of the country as has the expedition which, true to the day, sailed out of Portsmouth harbour on Restoration Day, the 29th of May, with the intention of endeavouring to reach the northern axis of our earth. The daily press has so teemed with the subject to the minutest details, that it has left but little for a monthly periodical to record; still as a nautical journal, notwithstanding the prolificness of the newspapers, we cannot let the subject pass without adding our "God speed" to the voyagers and giving a brief account of their preparations to meet the dangers of the "thick ribbed ice," the great enemy they will have to contend with.

The vessels that have been selected for this service are, as is now well known, the *Alert* and the *Discovery*; the first, one of Her Majesty's ships of 751 tons, with engines of 100 horse-power, and the second a sealing steam vessel, which, as the *Bloodhound*, was purchased from Messrs. Baine and Johnson, of Greenock, of 578 tons and 100 horse-power. Both ships were sent to Portsmouth to be strengthened and fitted under the immediate superintendence of the most experienced of our Arctic navigators, Admiral Sir Leopold M'Clintock, the present Superintendent of the Dockyard. At the bows the angles on each side the stems were filled in with oak, making a solid and smooth surface from the bows to the stemhead. An outer sheathing of teak, fir and Canada oak, ranging in thickness from 7 inches at the wales to 3 inches above and below, has given them external strength, whilst within, fore and aft stringers run along the sides on the lower deck. Additional water-ways have been fitted on the beams, and strong iron knees inserted. Round the stems and covering the oak chocks and the outer planking, are fitted three-eighth iron plates, extending $14\frac{1}{2}$ feet on either side above the water line, and 9 feet below that line. These plates will prevent the abrasion of the outer planking when stemming the ice. As a necessary precaution, the holds are divided into five water-tight compartments, so that if an injury happens to one, it will not materially alter the flotation of the ship, and as pumps to each compartment can be worked by the whole power of the engines, repairs can easily be effected.

Arrangements have been made by which the rudders can be unshipped and hoisted up, should they be endangered, or when the ships are frozen

in, and by means of telescopic screw-shafts, the propeller can readily be disconnected and raised in the screw-well, thus leaving the stern entirely free from projections when hampered with ice, whilst both the shaft and propeller are safe, and they can be brought into use in a very short time, when required.

The vessels are barque rigged, with the masts, yards, and spars identical in both ships, so that they are interchangeable, a point of great advantage where accidents are likely to occur, and with the view of saving manual labour, many of the appliances used in the merchant navy have been adopted.

The iron work about the ship, wherever practicable and likely to be handled, has been covered with leather, and the cabins and mess-places are lined with *fearnought*.

The boats, of which each ship carries nine, were built by White, of Cowes, and are unique in their construction; the whale boats, yawls, and cutters have one diagonal thickness of mahogany plank coated with marine glue, on which, adhering to it, is a covering of stout unbleached linen, that becomes perfectly water-tight by its adhesion, and would keep the water out if the outer planking was stove; outside is a longitudinal planking of wych-elm, and pine. The ice-boats have a sheathing of cork over the diagonal planking and canvas coat.

It may readily be admitted that under Sir Leopold M'Clintock's supervision, the sledges, which for the purpose of reaching the Pole may be considered only next in importance to the boats, would be most perfect in every respect; of these the vessels have about twenty-four, varying in size from those adapted for twelve men, to small dog-sledges, and also two newly-designed bridge or ladder-sledges, which are 16 feet long and only 2 feet wide; they carry a heavy load, and can be used either as a ladder or a bridge. The whole are made of American elm, which is tough and light, the principle of construction being a pair of steel-shod runners, curving upwards at the ends, and kept parallel by a crossbars; a longitudinal bar reaches from one horn of the runner to the other, supported by small stanchions or pillars resting on the runners, whilst on the top a platform is formed of crossbars, over which a canvas sacking is stretched to support the load. No screws or nails are used, excepting to secure the steel runner, all the other parts being secured by strips of raw hide, which, being applied after soaking in hot water, becomes rigidly tight as it dries.

The tents are adapted to the sledges, in regard to the number of men; they are made of unbleached duck, of 12 feet square to the pound, and are of the usual form of an opened book cover standing on its edges: the eight man tent is 9 feet 4 inches long, and 7 feet high and wide, weighing thirty pounds, the others proportionately larger or

smaller ; the ends are spread by two poles fitting into caps at the top of the tent, the lower corners being tied down to the poles, the drag-rope forms a ridge-rope, and the end poles are stayed at one end to the sledge itself, placed transversely to the tent, and at the other to some of the heavy *impedimenta* of travelling ; at the sides are spans which, set up to pegs, keep the sides distended and make more room within, whilst a couple of wooden half hoops do the same for the angle at the top by spreading it ; pockets are fitted within the tent for the preservation of journals, instruments, &c., and a little square aperture is fitted at the inner, or officer's, end of the tent, which serves the purpose of a window ; this can be opened or shut at pleasure by strings through eyelet holes in the tent ; the door can be also closely secured. The addition of a weather cloth set up to the tent on one side, and to the guy or stay on the other, enables the cook to prepare the meals outside the tent and still be sheltered from the cutting wind.

The provisions for the expedition were principally prepared at the Royal Victoria victualling yard at Deptford and from the time the expedition was decided on, the quantity of pemmican made at that place was on an average 1000 pounds a week. This condiment which will form the staple food of the crew on their arduous journeys across the ice-fields, is composed of equal parts of the best beef, kiln dried on oaken hurdles and then ground to a powder, and suet, with about 6 per cent. of sugar to flavour it, this is well kneaded together, put in tins and hermetically sealed, but even this, in the intense cold, becomes so hard as to necessitate its being chopped with an axe. Biscuit, made with pemmican and flour is also largely supplied. The preserved meats, soups, and vegetables were prepared by the well-known firm of Hogarth and Co. Two officers were specially appointed to examine all the articles of food and clothing, so there is no fear of another *Goldner* supply of filth.

As with the food and clothing, so with the officers and men composing the expedition, great care has been taken in the selection, and all have been medically examined, a certain standard of age and height having been established and carefully kept to. Precaution was taken in every department to conduce to success, and every idea that the experience of a century of Arctic voyaging and travelling could suggest, has been listened to, well weighed and adopted or rejected.

As before stated, the object of the expedition is not only Arctic discovery in the general sense of the term, but specially is to attain as high a northern latitude as possible, even to the attainment of the point where latitude cannot be exceeded and longitude ceases to be.

The vessels, accompanied by the *Valorous*, are now at the date of writing, probably safe at Disko, at which port the *Valorous* will complete them with provisions and coal, and then return to England. The *Alert*

and *Discovery* will proceed on their mission. Advices had previously been sent to the northern Danish settlements to procure as many dogs as possible, but it is feared that there will be some difficulty in obtaining the number required (sixty), as of late years a disease has existed among the canine fraternity which has thinned their numbers greatly, still it is to be hoped that a large portion of those required may be had. From Disko, the ships will not meet much ice until they reach Upernavik, after leaving that port, they will have to encounter it, and—to whalers—the much dreaded passage across Melville Bay, where so many fine ships have met their fate by being crushed, or ground, between the fast and the moveable ice, but steam has greatly mitigated the danger by enabling a ship to take advantage of every movement of the ice to force her way through, and the bay once passed, the entrance, of Smith Sound, is open for their entry, and from this all must be speculation. That the ships may be stopped in their progress, as Hayes and Kane were, is not improbable, but should the chance occur of such an open passage as let the *Polaris* pass so far north, we may be sure the ships will be pushed through at once; but, as was stated in our previous paper, it is not intended that both ships shall proceed as far north as possible, but that the *Discovery* should not be taken beyond latitude 82°, and then, if a safe harbour can be found for her, she will be left, whilst her consort will go on towards the Pole as far as possible. On finding a harbour to winter in, the first endeavour will be to open the communication between the two ships, and it is not too much to expect that this will be done before the winter finally sets in.

Some autumn travelling may be expected before the sun sinks beneath the horizon for the long arctic night; this is not only advisable for the purpose of ascertaining the nature of the surrounding country, but to accustom the men to the mode of travelling, of which they will have so much in the coming spring. This will also be the opportunity for the scientific gentlemen accompanying the expedition: with a dog-sledge they will be enabled to explore the neighbourhood before the winter ice envelopes the land. All the usual precautions of housing in, &c., will be made, and then with the departure of the sun all the parties will be in, and the winter round of work and amusements commence. The work will consist in re-stowing holds, refitting and fitting sledges, and otherwise preparing for the great work of the coming summer; and for amusements, they are amply provided with musical instruments, costumes, and scenery for acting plays, and games of all kinds; instruction will also be combined with the amusements—this for the men. The officers have more intellectual pastimes, in regular magnetic, meteorological, and other observations.

With the returning dawn all will be activity, preparing for travelling;

doubtless some of the men of the *Discovery* will be drafted to the advance ship, to take part in the one great effort of the expedition, to reach the Pole, and in April, with a temperature at -30° to -40° , they will start, having the advantage of their autumn experience and reconnoissances to guide them. Should there be a continuous line of shore towards the Pole, their task will not be so much beset with difficulties as if islands with wide straits or channels between meet them on the route; in the first case the dogs will prove invaluable; in the last, they will be useless, for if the prosecution of the journey north is to be accomplished by means of boats, aided by sledges, the dogs may be left behind, but whether it is to be effected by sledges, or boats, or both, there is no doubt that the travelling must be done by means of relays, some boats or sledges being employed in going and returning, to keep the more advanced supplied with provisions. Such is the perfection to which sledge travelling has been brought that it is not too much to affirm that if the space between the ships and the pole is adapted for that mode of travelling, the accomplishment of the great object of the voyage is a good probability, for with the dogs the last or most advanced stages of the journey can be accomplished in far less time than if dependent on men only, the dogs requiring so much less food and no clothing. But it is by no means so simple a matter to drive a dog sledge as may at first appear, the constant application of the whip and consequent action of the whip-arm of the driver, is very tiring; the dogs are harnessed in threes and it is the constant exertion of a side dog to become the middle dog—probably to escape the lash—by leaping over the backs of each other, the harness then soon becomes so plaited and entangled as to occasion great loss of time and perhaps temper in getting it clear.

If Captain Nares is successful in reaching the Pole next summer there is nothing to prevent our seeing him back in England soon, but scarcely before the fall of 1877: should he be delayed beyond that period, a vessel will be sent to his assistance, but it must always be borne in mind that he has the rear ship to fall back on should his own be inextricably fixed in the ice, and as on his voyage north he will leave a series of documents stating his proceedings and intentions, there is little fear of the clue being lost in following him up.

Yet another expedition to the polar regions will have started before this article is before the public—viz., the *Pandora*. This vessel has been purchased from the Government and fitted out at private expense and the command given to Captain Allen Young, a Lieutenant in the Royal Naval Reserve, and who accompanied Sir Leopold M'Clintock in his well-known voyage in the *Fox*.

It is Captain Young's intention to convey a mail to the *Alert* and

Discovery in Smith Sound and then proceed through Lancaster Sound, and if Prince Regent inlet is navigable, down that inlet through Bellot Strait into Victoria Strait, or, if that is found not practicable, follow Sir John Franklin's route down Peel Sound to the position the *Erebus* and *Terror* were finally locked in the ice, where every search will be made for the journals of those ships, which there is every reason to believe were carefully preserved and deposited in safety. That accomplished, and a fair open season met with, it is not at all improbable Captain Young may succeed in taking his vessel along the north coast of America and through Behring Strait, and thus be the first to *make* the north-west passage.

Captain Young will be accompanied by Lieutenant Lillingston, R.N. and one or two scientific gentlemen.

THE COMMERCIAL VALUE OF HUMAN LIFE.

THERE are few social problems of any importance which have received less attention, or, indeed, which have been more persistently ignored, than that which relates to the commercial value of human life. To say that human life may be valued at all, requires a certain amount of moral courage. The statement may be ranked among that numerous class of propositions which, although indisputable, must not be expressed in the hearing of mankind generally. Those who utter them, render themselves liable to be called all kinds of hard names by individuals who have usurped a kind of special title to humanity and generosity of heart. To regard certain facts as facts, is to be designated as hard-hearted, cynical, indifferent, and by a host of other names which come from the tongues of a certain class of people, with all the glibness imaginable. Yet, in spite of incurring all these chilling epithets, we say it is a fact that human life has a commercial value: and, although it may not be possible to quote its exact market price, the time has arrived when it would be well if this fact were recognised. For this is a case, in which, ignoring the truth is calculated to work a vast amount of injury.

The sentiment which regards human life as something sacred is one that excites the deepest admiration. And rightly too: the feeling is one to which every other consideration should be sacrificed to a certain extent. But the sacrifice must not be an infinite one. There must be a limit, and this is the fact which we think demands a clearer recognition than it has ever yet obtained. It is useless to ignore

truths of this kind, however unpleasant they may be. They persist in being true, notwithstanding all attempts to push them into dark corners, and in spite of the utmost put forth by reckless bidders for the attractive and easily acquired name of "humanitarian."

The nineteenth century may not inaptly be termed the age of cheap sentiment. Humanity, in the sense of generous sympathy, and benevolent tenderness of heart, has but recently made itself manifest in the world. Its appearance is a matter for the sincerest congratulation, but the plant is merely in its first growth. It has yet to be trained, and those who would not have its offshoots interfered with or controlled in any way, forget that its presence in certain places, may prove rather injurious than otherwise. Sentiment, however ennobling, must, after all, yield to the hard requirements of every-day life, in spite of every protest, however well meant, to the contrary.

At the present time we are in danger of suffering great inconvenience from the ill-judged efforts that are constantly being made on behalf of what is termed humanity. It is a chord that is easily moved, and once struck it vibrates in every heart. Men forget that the appeal which is made to them is often no more than an appeal raised on the side of a certain small section of their fellows, and in the burst of sympathy with which they respond they are apt to lose sight of that greater humanity which is entitled to the first and greatest consideration. In their efforts to benefit the few, they fail to bear in mind the many whom they may be indirectly and seriously injuring. Especially is this the case in our own immediate day. No sooner is an evil sighted, than a cry for legislation is raised. Ill-advised zealots, and demagogues who are completely unadvised, come to the front with heart-rending appeals for laws that are at once to remedy the ills of which they complain. Then it is that the utmost courage is required on the part of those who may doubt the advisability of the proposed measures. Any expression of misgiving is tolerably certain to be hailed with some of the epithets already quoted. Or, what is worse, the opponents of the schemes will be told they are willing to sacrifice human life to their own individual interests. An accusation of this kind is far more easily made than refuted, and there are few men who would not remain silent rather than incur the risk of encountering it. And it is this peculiarity which renders protective legislation of this description so highly dangerous. Acts of Parliament are drawn up and passed without receiving the full discussion they require, simply because men shrink from expressing their heartfelt opinions. The general mass of the people are easily persuaded that the proposed enactments are just. They think that a great evil exists, and its remedy is the only thing which they have in sight. Of the ultimate consequences of the suggested measures they know nothing. For them it is sufficient to believe that

they are saving human life ; and believing that, they are content to allow every other consideration to take care of itself.

Yet it seems that popular sympathy is to be sought for and exhibited only in certain cases. In some instances life may be sacrificed *ad libitum*, without so much as a hint at special legislative interference being offered. That a couple of hundred people will be killed in the streets of London in the course of the present year, is almost as much a certainty as the rising of the sun to-morrow. Equally certain is it that some thousand lives will be lost upon our English railways. Now, some of these lives might be saved by the appointment of inspectors to see that no horse should go beyond a walking pace, nor any train travel faster than ten miles an hour. Why is this not done? Simply because the inconvenience and commercial loss would be too great a price to pay. We can all see at a glance that it would be too high, and the man who stood up to make such a proposition would be laughed to scorn for his pains. But when it is a case where the immediate results of undue interference are not so patent, but is still as wrong, the aspect is utterly different, and every consideration yields to the "sacredness" of human life.

This is particularly evinced in the proposals that are constantly being made for legislation with regard to merchant shipping. We are told that life is continually sacrificed to the "cupidity of shipowners," and that the majority of the life so lost might be saved, if Parliament would only interfere and regulate the scantling of vessels, and prohibit more than a certain weight of cargo being carried in them. We do not dispute these premises. Doubtless life would be saved if these principles were accepted by the Legislature. But at what cost? At the present time the carrying trade of England is put to a severe test by foreign competition, and every fresh interference with its freedom makes that competition more severe. Every new regulation that may be imposed tends to drive the trade into hands less fettered by restrictions, and hastens the approach of that day when we shall be no longer able to boast that Britannia rules the waves. England owes her greatness to her maritime supremacy more than to any one cause that could be named, but if it be insisted on that the British tar shall run no more risk in a common collier than in a heavily subsidized mail steamer, that supremacy may be looked upon as a thing of the past, and we must ask foreigners to encounter the dangers which we are no longer willing that our own countrymen shall incur.

It is not unlikely that one of the main reasons why general sympathy has been so readily excited on behalf of the Jack Tar is to be found in the fact of his very great popularity. He is the one English character who has always been invested with an atmosphere of poetry and romance. He is a favourite with all. There are few Englishmen who do not love the sea, and who do not admire almost everything connected with it. But

especially is this the case with the sailor. We all know that he plays a perilous game, and that the life of the brave and enterprising *must* be sacrificed to the major requirement; the general welfare. So it must be. We shall never make exploration, or the study of law, or surgery, or clinical practice, or hunting, as safe as sitting by the parlour-fire, and the so-called advocates of humanity may rest assured that a voyage on board an ordinary merchantman will never be rendered so secure as a trip on board a first-class mail steamer. It cannot be done. It is useless beating about the bush by talking nonsense. The laws of political economy will admit of no compromise. For, if protective legislation were insisted on, and English commerce sacrificed in order to increase the security of English lives, other lives must be sacrificed, and this state of things could not be considered any great improvement on the whole.

A storm at sea, a ship, perhaps not too strongly built, struggling with the wind and waves, and the unfortunate mariners fighting for dear life, are details that make up a terrible picture in all truth. The heart must indeed be hard, that does not sympathize with men placed in such a position. With details like these, no very skilful hand is required to depict a scene that is sure to excite profound sympathy, and one that is well calculated to stimulate the Legislature into interference that may end in national emasculation.

We are apt to forget that the existence of a community rests on the fact of risks being run by real men. We often forget that lives are being sacrificed or greatly shortened in scores of the great industries that go to make up England's commercial prosperity. Though less tragic, there are many other hardships in reality no less severe than those encountered by the sailor, to which humanity has to submit in this world. These sacrifices seem unavoidable, but it must be remembered that they are largely counter-balanced by the benefits which they indirectly confer. Every increase in trade and commerce means a corresponding increase in the general happiness and prosperity of mankind, and in assisting towards this increase the lives of many of those who gain their living upon the sea must be sacrificed as inevitably as the hundreds and thousands of existences that are every day being hastened to their end by following unhealthy occupations; or as inevitably as those individuals who are doomed to die upon our railways in the course of the present year—a sacrifice to the general convenience of the community at large.

“Je crois qu'il faut se contenter de témoigner de la compassion, mais se garder d'en avoir. C'est une passion qui n'est bon à rien au dedans d'une âme bien faite, qui ne sert qu'à affaiblir le cœur et qu'on doit laisser au peuple, qui n'exécute jamais rien par raison, a besoin de passion pour faire les choses,” says La Rochefoucauld. This, like many

other "maxims" of the great French cynic, is composed of about equal parts of truth and fallacy. There is no necessity, whatever, for the well constituted mind to keep itself entirely free of compassion. The world would be rather a dreary abode were the feelings of sympathy and pity entirely banished from men's hearts, and their places occupied by shams. The great requisite which is half implied in La Rochefoucauld's saying, really consists in keeping the feeling of compassion subject to the reason, and in preventing ourselves from being hurried away by a tempest of emotional sympathy, over which we have no control. Unfortunately, those who attempt to do this, occupy no enviable position. The general world is apt to regard them somewhat sceptically. And this suspicion is largely fed by the ravings of fanatical zealots, who appear to imagine that sympathy and reason cannot exist together; and by the balderdash of professional agitators, whose interest induces them to throw doubts upon the intentions of those who dare to raise a protest against their schemes. Nor can it be denied that men of eminence have been teaching, who have held that those who assert the existence of laws which must inevitably mitigate, or altogether nullify, the well-meant plans of unreflecting benefactors, are tolerably certain to be deficient in true sympathy of heart. They have maintained the necessity of being zealous and "thorough" in everything, quite forgetting that such an argument, if worth anything, might be put forward as a plea for one-half the fanaticism and folly the world has ever seen.

In making these observations, we do not wish it to be inferred that we are advocates of complete freedom, or that we are opposed to legislative interference of any kind. It is far from unlikely that there are shipowners so unscrupulous as to render interference absolutely unnecessary; but where that interference should begin and end, we have no intention of here attempting to point out. Our sole object has been to make clear a fact which just now seems in great danger of being altogether ignored. Those who have taken upon themselves to come forth as champions of the sailor's cause have not hesitated to assume that the maximum degree of safety that *can* be obtained, *ought* to be obtained. That this assumption is false, that it involves an actual impossibility, appears to us to be indisputable. The whole question narrows itself down to one clear and unmistakeable position. If all nations were to adopt protective legislation with a view to insuring comparative immunity from risk (an event which no one seems to imagine possible), the effect must be a tremendous increase in the cost of transport, and a corresponding hindrance to the general welfare and prosperity; but if only British sailors are to be protected by this special legislation, the tendency cannot be otherwise than to drive the British carrying trade into hands less trammelled by restrictions. The maximum degree of safety

that is attainable is quite incompatible with such commercial prosperity as now exists, and those who array the long list of lives lost every year at sea, with a view to exciting popular sympathy and indignation, appear to take no account whatever of the great advantages which the risk of sacrifice of life confers upon mankind. Doubtless it would be possible to make travelling by sea as safe, if not actually safer, than travelling by land. The almost complete freedom from fatal mishap enjoyed by some of our great lines of mail steamers show this much. But those who declaim against the practice of sending to sea men or ships that afterwards show themselves incapable of resisting the risks they may have to encounter, would do well to ask themselves at what cost this exceptional safety would be purchased. Surely it is not too much to ask them to remember that it is not because human life is being lost at sea that we should be justified in adopting all means that would remedy the evil. It must be acknowledged that it would be entirely unjustifiable to interfere with a view to preventing men from being employed in any ordinary occupation however fatally unhealthy it may be. Why, then, is maritime industry to be singled out for extraordinary legislative control? The world already possesses an abundance of distinctions unsupported by differences; there is no necessity for searching about with a view to adding to their number. Individual loss is an evil, but when it comes to a question of hampering one of our greatest industries so seriously as to threaten its destruction the matter becomes of the gravest importance, and it behoves all men calmly to consider the whole facts of the case, and not to allow themselves to be imposed upon by the declamations of zealots who are either unable or unwilling to comprehend an evil in all its bearings.

In conclusion, we must protest once more against the idea that those who call for hesitation in dealing with the question, have no regard for the life of the sailor. For our own part we can see no reason why as much genuine sympathy of heart should not be found among the men who ask for careful consideration of the entire case as amongst those who themselves assert the purity of their intentions and their intense respect for human life. At all events, the latter have failed to show that they actually enjoy that monopoly of humane feeling which they have assumed, and until they have done this, the world will be justified in listening with some doubt to the grave charges and insinuations they have thrown so recklessly at the heads of others.

OUR PARLIAMENTARY RECORD.

A Department of Commerce and Agriculture, Friday, May 21st, 1875.—Mr. SAMPSON LLOYD submitted a motion affirming the desirability of having the affairs of Government, as far as they especially related to commerce and agriculture, administered under the direction of a principal Secretary of State, who should be a member of the Cabinet. After a debate in which, amongst other members, the CHANCELLOR of the EXCHEQUER, Mr. W. E. FORSTER, and Mr. DISRAELI took part, the motion was put and negatived.

Seal Fishery (Greenland) Bill, Friday, May 28th.—After a few remarks from the Earl of DUNMORE, in the House of Lords, this Bill passed through Committee, and was reported without amendment.

The Transport of Cattle, Monday, May 31st.—In the House of Lords, Earl DE LA WARR moved for a copy of the Report of the Inspector of the Privy Council, relative to the importation of foreign cattle at Deptford, referred to by the Lord President, on the 30th of April last. In doing so he also stated that he had received communications corroborating the statements of the cruelty alleged to be practised, and expressed a hope that stringent regulations would be adopted for its remedy.—The Duke of RICHMOND, while disputing altogether the accuracy of the allegations made, believed the law was sufficient, and hoped his noble friend would be of the same opinion when he had perused the papers for which he had moved, and to the granting of which there was no objection on the part of Her Majesty's Government.

Seal Fishery (Greenland) Bill, Monday, May 31st.—This Bill was read a third time and passed in the House of Lords.

The Loss of the "Schiller," Monday, May 31st.—In the House of Commons, Mr. JAMES asked the President of the Board of Trade whether his attention had been called to the circumstance that the crew of the *Schiller* (which was lost in a fog, within half-a-mile of the Bishop's Rock Lighthouse) neither saw the light nor heard any fog-signal, although it was stated that a good look-out was kept; whether his attention had been drawn to a gas burner, invented by Mr. Wigham, which had been tried practically at lighthouses in Ireland, and which was stated in Professor Tyndall's report to the Board of Trade, to be the most powerful burner in use; whether Professor Tyndall, in his report on fog-signals (Paper 188, Session 1874,) did not describe the steam-siren as the most powerful fog-signal which had hitherto been tried in England; and whether, in conjunction with the Trinity House, the Board of Trade proposed to take steps to adopt these improvements for the lighthouses

of Great Britain and the Colonies.—Sir C. ADDERLEY: An inquiry has been ordered into the circumstances attending the loss of the *Schiller*. It was necessary to correspond with the German Government first, but it will commence at Greenwich to-morrow. With regard to the steam-siren, reported on by Professor Tyndall, and also to the use of gas in lighthouses, papers have been laid on the table this Session on both subjects, more fully explaining than I could in an answer to a question what steps have been taken by the lighthouse authorities and the Board of Trade in adopting these improvements. The gas papers were presented in February last, and have been some time circulated. The fog-signal papers will be out shortly. The Lighthouse Boards are quite alive to the importance of adopting the best improvements.

Lighthouses, Monday, May 31st.—Mr. A. VIVIAN asked the Postmaster-General whether, with the view of lessening the great suffering and loss of life occurring on such occasions as the recent loss of the *Schiller* off the Scilly Isles, he would take into consideration, if necessary with the Board of Trade and Trinity House, the establishment of telegraphic communication between isolated lighthouses and the nearest land; and, in the event of no special fund being now applicable for this purpose, whether the Government would consider how the necessary expenses should be met.—Lord J. MANNERS said he understood that neither the Board of Trade nor the Trinity House was very favourable to the suggestion contained in the question. From a purely Post Office view there were serious objections to it, but, as his right hon. friend had just announced, an inquiry into the loss of the *Schiller* would be commenced to-morrow, and, if in the course of that inquiry anything transpired tending to modify the opinion of the department on the subject, it would, of course, be his duty to communicate with the two departments he had mentioned, and he should be very glad to communicate the result to the hon. gentleman.

Sea-going Ships, Monday, May 31st.—Mr. PLIMSOLL asked the President of the Board of Trade when the promise he made in the beginning of the Session that records of the draught of water of sea-going ships, should be taken in the ports of London, Liverpool, Leith, Glasgow, and Belfast, &c., would be carried into operation.—Sir C. ADDERLEY: We have received since the 1st of February records of draughts of water from all the ports named, and have made new arrangements for more complete records than formerly. We do not think it right to increase the staff of surveyors, as it must be to make such records complete, until the Bill now before the House is passed.

Mr. PLIMSOLL then asked when the Wreck Register for the year ending June, 1874, would be ready for issue, and whether he would direct that

these Returns should be issued with less delay in future.—Sir C. ADDERLEY: The Wreck Register for the year ending June, 1874, has been some time in the printer's hands, and is completely revised and ready for publishing. The alteration of making up the return to June, instead of December, so as to get the whole of each winter in one return, and the insertion of additional matter, has caused some delay. The Wreck Register up to June, 1875, will be presented shortly, and I hope will be circulated before the end of the Session.

The "Captain," Monday, May 31st.—Replying to Captain PIM, Mr. HUNT said he had read a pamphlet entitled, "The true story of the loss of the *Captain*," and had duly considered the suggestion that an enquiry should be held into the loss of the vessel. He had, however, come to the conclusion that no public object would be gained by taking that course.

Ardglass Harbour, Tuesday, June 1st.—Sir M. HICKS-BEACH, in reply to Lord A. HILL-TREVOR said a memorial which had been presented to the Lord Lieutenant of Ireland with regard to Ardglass Harbour in the county of Down, had been for some time under the consideration of the Government. There had also been much correspondence on the subject between the Irish Government and the Lords Commissioners of the Treasury. He was happy to be able to inform his noble friend that the Treasury had consented to include the harbour at Ardglass in the three next harbours which would be benefited by Government aid, and that the terms on which that aid would be given would be that a free grant would be made of three-fourths of the sum necessary for the construction of the harbour, and that the remaining fourth—namely, £5,000 in that case—should be raised from local sources.

Navy Promotion and Retirement, Tuesday, June 1st.—An interesting debate on this subject was opened by Sir J. HAY, in which Mr. HANBURY-TRACY, Mr. CHILDERS, Lord C. BERESFORD, Mr. WARD HUNT, and Mr. GOSCHEN also took part.

Merchant Shipping Act, Thursday, June 3rd.—In reply to Mr. PLIMSOLL, Mr. DISRAELI said it was the intention of the Government to use their utmost efforts to pass all the Bills which they had introduced and which had received the acceptance of the House by being read a second time. The Merchant Shipping Acts Amendment Bill was in that category, and he need hardly assure the hon. gentleman that it was his fervent hope it would be passed in the present Session.

Naval College, Thursday, June 3rd.—Mr. EDWARDS asked the First Lord of the Admiralty whether the Government would consent to appoint a Departmental Commission to examine and report on the fitness and the advantages of Weymouth before coming to a determination as to the site

of the proposed Naval College.—Mr. HUNT trusted the hon. member would not think him presumptuous if he said he hoped to be able, with the assistance of his colleagues, to determine the question to which he alluded without the appointment of a Departmental Commission. (Hear, hear.)

Pilotage Fund, Thursday, June 3rd.—Mr. ASHLEY asked the President of the Board of Trade whether the Trinity House, in their administration of the Pilotage Fund, to which all pilots are bound to contribute, confine the superannuation allowances for incapacitated pilots to those among them who are more or less paupers, relying on the terms of 6th George IV., Cap. 125, Sec. 52, where the word “indigent” stands before “pilots;” and, if this be so, whether the Board of Trade would take steps to rectify this practice.—Sir C. ADDERLEY: The Trinity House do not apply the Pilot Fund according to the terms of the Act referred to by the hon. member—which Act is repealed—but under the 336th Section of the Merchant Shipping Act of 1854, which makes all pilots, incapacitated by age, infirmity, or accident, eligible for the benefits of the fund and the superannuation allowances.

Destruction of Sea Fish, Friday, June 4th.—Mr. TREMAYNE asked the President of the Board of Trade whether his attention had been called to a practice recently introduced of using torpedoes and other explosive engines for the destruction of sea fish, and whether he would take steps for the prohibition of so wasteful and injurious a practice.—Sir C. ADDERLEY had no information as to the practice referred to, and, even if he had, he was afraid that, whatever might be its merits, the Board of Trade would have no power to interfere. At the same time, if the hon. member would confer with him as to the particular case he had in view, he should be happy to consider it.

The “Devastation,” Friday, June 4th.—Replying to a question put by Lord R. CHURCHILL, as to whether it was true that several cases of sickness had occurred on board the *Devastation*, and whether, if so, the sickness was to be attributed to the defective ventilation of the ship, Mr. WARD HUNT stated that no reports had been received with regard to the sanitary state of the vessel since she arrived in the Mediterranean. The previous report on that score was very favourable, and during the cruise in the Channel Squadron last summer, her sick rate was exceedingly low. He read the following extract from the Report of the Commander-in-Chief in the Mediterranean, dated the 21st of May:—“I inspected the *Devastation* yesterday, and, with reference to the question of ventilation, I found that, with everything open and awnings spread, without any artificial ventilation of fan, the ship was fairly cool below and without any disagreeable sensation of oppression even in the cabins. With the

fan in motion there was a sensible difference in the air from being once set in motion, and I am of opinion that it was cooler below than in most iron vessels. When at general quarters, with all the doors closed to the several compartments, it was very close, but not worse than when ships are closed in action." He was unable to state whether the vessel would be detained in the Mediterranean.

Telegraphic Communication, Friday, June 4th.—Lord J. MANNERS made a correction as to a statement made by him the other day that the opinion of the Board of Trade, the Trinity House, and Lloyd's Committee was not favourable to the establishment of telegraphic communication between isolated lighthouses and the main land. He had received a letter from Lloyd's Committee stating that, as far as their opinion was concerned, it was favourable to the establishment of such communication. He could, therefore, only express his regret that such a misapprehension should have occurred.

Rule of the Road at Sea, Tuesday, June 8th.—While Sir J. HAY, who had given notice of a motion on the necessity of amending the present Steering and Sailing Rules, was proceeding to call attention to the report of the French *Conseil d'Amirante*, the House was counted out, twenty-seven members only being present.

The Transport of Cattle, Friday, June 11th.—The Duke of RICHMOND having, the other night, disputed the facts stated on this subject, and having declared that it was not intended to take any further steps in the matter, the Earl DE LA WARR, moved for the appointment of a Select Committee to inquire into the state of the law with regard to the transport of cattle by sea and land; to inquire into the rules and regulations of the Privy Council, with special reference to the methods of transport now adopted; to receive evidence with reference to such alterations of the law as may be deemed advisable, and to report upon it. The Duke of RICHMOND could not concur in the motion, believing that the House was in possession of all necessary information on the subject, and that the rules and regulations of the Privy Council Department were sufficient for their purpose. He had referred the matter to the Board of Trade, and the opinion of Mr. Calcraft, the head of the railway branch, and of Mr. Gray, the head of the marine branch, was that they had no reasons for believing that there was any necessity for further inquiry whether as to the transit of animals by land or their transit by sea. Lord CARLINGFORD, Viscount PORTMAN, and Lord DUNSANY made some observations on the subject, the Earl DE LA WARR ultimately withdrawing his motion.

Board of Trade Inquiries, Friday, June 11th.—In Committee of supply, on the vote of the Board of Trade and subordinate Departments, Mr. WATKIN WILLIAMS complained of the unsatisfactory way in which

Board of Trade inquiries, especially in the case of shipwrecks, were conducted, and of the enormous cost which they entailed.—Mr. **HERSCHELL** believed the Board of Trade inquiries might be better conducted, but he did not think the money thrown away.—Mr. **PLIMSOLL** thought the way in which the money was spent was worse than useless. The Surveyors were little better than men picked out of the street; in fact, they were often picked out of the street. If half the sum were honestly expended in trying to prevent unseaworthy ships from going to sea, instead of being squandered in farcical inquiries intended to throw dust in the eyes of the public, the loss of life at sea, he believed, would be diminished by half.

Irish Fisheries Inspectors, Monday, June 14th.—In reply to Mr. **BUTT**, Sir **M. HICKS-BEACH** said: The Report of the Inspectors of Irish Fisheries for 1874 is now all in type, and I am informed that it will be forwarded next week for presentation to Parliament. The Inspectors have been employed for some time past in making the necessary local investigations into the circumstances and *bond fides* of the various applicants for loans under the Irish Reproduction Loan Fund Act, as well as into the solvency of the sureties offered in each case. As many as 2,800 applications have been made. One hundred and thirteen have been approved of and forwarded to the Board of Works, with whom rests the duty of paying the money. The delay is due to the considerable amount of fresh work which has been thrown by the Act upon the staff of the Fisheries Office.

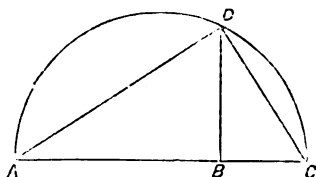
Merchant Shipping, Tuesday, June 15th.—In reply to Mr. **GOURLEY**, Mr. **DISRAELI** said:—I am not aware that “the uncertainty in reference to future legislation with reference to British shipping,” as stated in the question of the hon. gentleman, “is causing depression throughout the country in the shipbuilding trade.” I am not aware of any uncertainty upon the subject, and my information as to the shipbuilding trade is quite the reverse of that possessed by the hon. member. Her Majesty’s Government intend to proceed with the Merchant Shipping Acts Amendment Bill, but I cannot now fix a day for the purpose.

The Merchant Shipping Bill, Tuesday, June 15th.—In reply to the Marquis of **HARTINGTON**, Mr. **DISRAELI** said that the Merchant Shipping Bill would be proceeded with on Thursday, the 17th June.

RULES OF THUMB FOR NAVIGATING COASTWISE.

To the Editor of the "Nautical Magazine."

DEAR SIR,—Seeing you have inserted the Rules of Thumb for Coasting in your last number, I send you another that requires 3 bearings to be taken, for which, if you think it worth publishing, you will perhaps find room in your Magazine: it may be both amusing and practical for some persons.



In Euclid, Book 6, Proposition 13, there is a Problem in which are given 2 straight lines, A B and B C (see figure), to find a mean proportional between them.

Solution: Place A B and B C in one straight line, and upon A C describe the semicircle A D C; from the point B erect B D perpendicular to A C, meeting the circumference in D, and join A D and D C. Then B D is the mean proportional required, that is, $AB : BD :: BD : BC$, or $AB \cdot BC = BD^2$. The demonstration for this is given in the 13th and corollary to 8th propositions of the 6th Book.

In the triangle A D C, as the $\angle A D C$ is an angle in a semicircle and therefore always a right angle, the other 2 angles, D A C and A C D, are complements of each other; from that I deduce the Rule, viz.:—

Take a bearing of light (or other object) when it is well before the beam and note the angle between it and the course, again when it is abeam, and also when the angle between the course *reversed* and the object is the complement of the angle between the 1st bearing and the course, noting also the time and log for getting the 2 distances run between the 3 bearings; then the product of the two distances run, is equal to the square of the distance from object at the 2nd bearing when it is abeam.

Example 1.—At 9 p.m., while steering east, I observed a light bearing N.E. by E.; we were going at the rate of 10 knots per hour, the tide being about slack water. At 9.27 p.m., the light was abeam, bearing

north, and at 9.39 p.m., it bore N.W. by N. ; required my distance from the light when abeam ?

The 1st distance A B is run in 27 minutes, at 10 knots per hour = $4\frac{1}{2}$ knots or miles.

The 2nd distance B C is run in 12 minutes, at 10 knots per hour = 2 knots or miles.

\angle D A C between 1st bearing and course is 3 points.

\angle D C A between 3rd bearing and course *reversed* is 5 points, being the complement of \angle D A C, or $8 - 3 = 5$ points.

Then $A B \cdot B C = B D^2$, or $4\frac{1}{2} \times 2 = 9$, the square root of which is 3 miles, which is the distance from the light when it is abeam.

In practice it is not necessary to work out the formula of extracting the square root, as you may always guess it near enough, as in

Example 2.—Steering E. by S., and going 10 knots (tide slack), at 10 p.m., I observed a light bearing E. by N. $\frac{1}{4}$ N. ; at 10.48 p.m. it was abeam, bearing N. by E., and at 11.2 p.m. it bore N. by W. $\frac{1}{4}$ W. : required my distance from it when abeam bearing N. by E. ?

1st distance run in 48 minutes, at 10 knots per hour = 8 miles.

2nd distance run in 14 minutes, at 10 knots per hour = $2\frac{1}{3}$ miles nearly.

The angle between 1st bearing and course is $2\frac{1}{2}$ points.

The angle between 3rd bearing and course *reversed* is $5\frac{1}{3}$ points, or $8 - 2\frac{1}{2} = 5\frac{1}{3}$.

Then $8 \times 2\frac{1}{3} = 18$, the square root of which is $4\frac{1}{3}$ miles nearly, which is the distance required. As the square of 4 is 16, and the square of 5 is 25, it is easily seen that $4\frac{1}{3}$ will be near enough.

In the above examples it will be seen that the 3rd bearing must be calculated from the 1st bearing ; having got the 1st bearing at A, find the angle between it and the course (\angle D A C) and subtract it from 8 points (or a right angle) which will give (\angle D C A), they being complementary to each other, this will be the \angle between the course *reversed* and 3rd bearing ; when knowing what it is you will look out for it, and so be prepared to get the 2nd distance when it is on, at C.

In a steamer having an indicator to show the number of the revolutions of the engines, which is the most accurate of logs, the distances are easily got without any trouble of hauling in patent logs, and also the error is avoided occasioned by loss while hauling in.

The other 2 sides of the triangle A D and D C may also be calculated if required.

Thus, in the 1st example—

To find A D, the distance from light when the 1st bearing was taken

$A C : A D :: A D : A B$ or $A C \cdot A B = A D^2$ or $6\frac{1}{2} \times 4\frac{1}{2} = 29\frac{1}{4}$, the square root of which is a little short of $5\frac{1}{4}$ miles or exact 5.4 miles.

To find D C, the distance from light when the 3rd bearing was taken.


$A C \cdot C D :: C D : B C$, or $A C \cdot B C = D C^2$ or $6\frac{1}{2} \times 2 = 14$,
the square root of which is $3\frac{3}{4}$ miles very nearly.

T. E.

Yarmouth, 11th June, 1875.

P.S.—In June number, in the 1st line of page 487, there is an error :
 $10 - 2 = 8$ hours should be miles.

SUBSTITUTES.

 N the 9th April last, Edward Williams, a fireman, was charged, at the Cardiff Police Court, for neglecting to proceed to sea in the *Virgini Schilizzi*—a British steamer. The charge was laid under the 243rd Section, sub-section 2, of the Merchant Shipping Act, 1854. The case was dismissed because the stipendiary did not consider that he (Williams) had signed the proper document. The vessel had come round from Limerick, bound on a foreign-going voyage, with the privilege to load at Cardiff. On reaching that port the captain had occasion to discharge some men, and ship others, amongst whom was Williams. As required by the 150th Section of the 1854 Act, he signed the captain's copy of the agreement ; and, as the "duplicate" also mentioned therein, was in the custody of the Registrar-General of Seamen, having been forwarded to him by the superintendent of the Mercantile Marine at Limerick, the form (referred to in the 158th Section) was left by the master as a home record of the transaction, whilst he was away at sea. This form is marked "Eng. 2," and issued under the authority and stamp of the Board of Trade. The officers had also taken the precaution of getting the crew to sign it, and it is strengthened by the law itself, inasmuch as the Act says that it shall be accepted in evidence in a court of law with all just exceptions. Notwithstanding this it was thrown out. It must be borne in mind that, although a civil contract, shipping articles, or rather a breach of them, may be punished criminally. It is therefore necessary that magistrates should administer such an Act in terms of the strictest rules of evidence. Looking at it in this light, the form in question is no evidence of an agreement at all. It merely contains what may be called the "trimmings," but the body of the agreement is not there. It shows the name of the ship and relative particulars as a heading ; it sets forth the rate of wages, advances, allotments, time to join the ship, and analogous particulars ; but it says nothing about the port of destination and other places to which the seamen may be conveyed

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en route. This is the defective part of it. It may be argued that the counterpart or "duplicate" agreement might be got from London and annexed. There are two fatal objections to this course—First, it is impossible to have such a knowledge of the movements of a ship, especially those having "running agreements," as to enable either officials or owners to comply with such an instruction. Secondly, if the form "Eng. 2" were signed as a "continuation" of the original and duplicate, the "original" also being signed, whilst the "duplicate" remained in the custody of the Registrar-General of Seamen the fact of bringing the latter and the "Eng. 2" together, could not make them as one document for law purposes. The fact is the duplicate might, through some error, be a wrong copy of the other, and prosecutor, witnesses, and the justices would be involved in a *ridiculus mus*.

It must be remembered here by those, who perhaps are not fully cognisant of such cases, that seamen who sign agreements, in the proper form in duplicate, and do not proceed to sea, are prosecuted under the 243rd Section Merchant Shipping Act 1854, in the absence of the master, and are liable, if the offence be proved, to a penalty of ten weeks imprisonment.

When the Merchant Shipping Act of 1854 passed, the number of steamers belonging to the United Kingdom was only a seventh of what it is now. In 1854 there were 538 steamers, registering 212,637 tons; in 1873 they had increased to 3,852, numbering 1,711,787 tons. At that time it was not contemplated by the Legislature that so many vessels, as now, would take "running agreements," or articles lasting for six months—viz., from 1st January to 30th June, and from 1st July to 31st December. Those, with others coming round to load, and doing business at the Mercantile Marine Office at Cardiff, in 1874, were no less than 834, and most of them had to ship their men on this condemned form. For the purposes mentioned in the 158th Section of the Act of 1854, and for the mere purpose of record, the form is well enough, but the business appears to have outgrown the circumstances contemplated in the Act. There should be another form of agreement drawn up and made binding for the purposes of evidence, to be used solely for members of crews shipping as substitutes, or for the completion of an agreement in point of number of the crew. The present is a favourable time for the subject to be considered, the Merchant Shipping Acts Amendment Bill being now before the House of Commons.

CORRESPONDENCE.

COURTS OF INQUIRY.

To the Editor of the "Nautical Magazine."

SIR,—In the article on Courts of Inquiry contained in your June number there is one passage which may lead to a misapprehension of the existing law and practice—viz., that passage which says :—"The parties arraigned on their certificates are not charged with any offence—the charge is, so to speak, developed during the inquiry—and a master, mate, or engineer, who has had no charge preferred against him, and, consequently, cannot know how to prepare his defence, may, at the close of the proceedings, find himself by the judgment of the Court deprived of his professional reputation and his means of life."

Now, it is quite true that, according to the opinions expressed by official and unofficial witnesses before the Royal Commission on Unseaworthy Ships, and according to the opinions implied in the clauses of the Government Bill which you criticise so favourably, the distinction between a mere inquiry and a criminal or quasi-criminal proceeding is not sufficiently kept in view by the present law. But it is scarcely the fact that an officer under the present mode of conducting these inquiries has no notice of the charge against him. Practically he always has such notice; and by par. 6 of Section 23 of the Merchant Shipping Act Amendment Act, 1862, 25 and 26 Vic., cap. 63, it is expressly provided that—"No certificate shall be cancelled or suspended unless a copy of the report or statement of the case upon which the investigation is ordered has been furnished to the owner of the certificate before the commencement of the investigation."

It is important that, even pending the passing of the present Bill, no misapprehension should exist on so important a point, and this is my excuse for writing to you.

Your obedient servant,

T. H. FARRER.

Board of Trade, Whitehall Gardens, S.W.,

June 9, 1875.

DRILLING BOILER PLATES.

A correspondent has made the following remarks on this subject :—

"I am well aware of your advocacy of drilling rivet holes; but does it not appear strange to you that such a system should require *any* advocacy? The unscientific objections to drilling go to prove (even in

this advanced age) the morbid tenacity with which certain *outré* engineers (?) cling to antiquated barbarisms. Certain ones, when a departure is made from the old rusty groove of doing work, turn up the white of their eyes, clasp their hands, and bewail the inroads on their 'good old times' and 'good old machines.' These are the brakes to true progression, and true progression is *good work*. I say, therefore, you ought to lay on the editorial strap to their abnormal minds. I generally demolish all fusty arguments in favour of punching (and they are represented by an integer) by merely saying, 'Drilling *in place* is *a job* and a certainty. Punching is *an uncertainty, ergo, not a job.*' 'Oh! but you can use inferior iron in drilling, and you know if punched before rolled it must be good iron to stand.' To this I say, 'Your views may suit rogues; you can always see our iron brands, and the engineer who would use inferior material not only insults science, but ultimately ruins himself.' I have given you a hurried outline of my views on the old and new systems."

To the Editor of the "Nautical Magazine."

DEAR SIR,—The two enclosed communications received by us will, no doubt, be of value to some of your readers, and I send them, therefore, for publication, if you think fit.

Yours, faithfully,
JAS. IMRAY.

89, Minories, E.C., June 10, 1875.

GULF OF BOTHNIA (UPPER PART).—KEMI.

As several of the captains arrived here have told us that had the brokers at the various ports of sailing been able to give some information as to the best mode of proceeding up to Kemi, it would have saved them paying pilot money and much loss of time, we make free to state the following:—

A vessel proceeding up to Kemi should direct her courses to Ulkogrunni, lat. 65° 28' N., long. 24° 51' E., where pilots can be obtained by usual signalling. The pilot will take the vessel from there to Yxkievi, another pilot station, and from thence another pilot will take the vessel to Kemi. From Ulkogrunni to Kemi the distance is about three and a-half miles German, or sixteen and a half English, and this distance can be navigated by the most deep-going vessels, without being dependent upon any particular kind of wind, as the course varies but little, and keeps north of the line.

The mode which most of the captains have hitherto chosen has been to proceed up on the Swedish side, and to employ pilots at Malören's lighthouse, by which, besides being dependent on fluctuating winds, as the course varies from north to east and south, the vessel has to bear the expense of much more pilotage.

The best way would, no doubt, be to make for Malören, and from there to direct her course for Ulkogrunni.

BENISAFF, ALGERIA.

Sheltered only from W. by N. round by the S. to E.N.E., is in the bay of Tlemcen, the western extremity of which is Raschgoun Island, where is exhibited a flashing light, red and bright, alternately, every ten seconds, and visible twenty-two miles. The eastern extremity is Cape Oussa, over which headland is the remarkable isolated mountain Jebel Oussa, seen a great distance off.

There are three mining establishments, but the largest shipments are by the French company, who can (when the sea is perfectly calm) put on board 500 tons per day.

The prevailing winds in the offing are east and west, and these send in a great swell, which causes work impracticable. In the winter, the place is not only bad, but dangerous. One steamer was employed twenty-seven days in getting a cargo of 1,000 tons, and had to put to sea many times during that interval. Good water may be obtained, but provisions are scarce and dear. There is good depth of water all over the bay. The writer laid three-quarters of a mile off shore, with the village bearing south (May) in five and a-half fathoms; bottom of fine sand. There is shelter under Raschgoun Island from easterly or westerly winds; but the nearest safe port is Oran, fifty-four miles off, which is also the port of clearance. A breakwater and harbour is being constructed by the French company, which will, when finished (two years hence), give facilities for loading 1,000 tons per day. The charge at present for labourage is 75 centimes per ton, which is excessive, considering the work done, and the great loss sustained by detention.

SAVING LIFE FROM SHIPWRECK.—HOW TO THROW A BLOCK AND ROVE ROPE FROM THE SHIP TO THE SHORE.

To the Editor of the "Nautical Magazine."

SIR,—Having just read the newspaper report of a meeting lately held under certainly most distinguished patronage at the Eastern Hall, Limehouse, for the purpose of complimenting and supporting the efforts of a gentleman on behalf of shipwrecked sailors, I noticed that the "hero of the evening," as he is appropriately termed by one of the speakers,

does me the honour to mention my name in connection with the proposed system of rescuing crews of ships by firing out a *double* instead of a *single* line.

More than twenty years have elapsed since I began a series of experiments with the object of supplementing the Manby single line, by firing out the double line or whip. I read papers, had meetings, &c. ; I was supported by the ablest of seamen, the most experienced naval officers, and last, though not least, the Board of Trade stood to me cordially and well. I worked the idea to the bitter end ; and only after years of incessant study and experiment arrived at the mournful conclusion that it was neither more nor less than a fascinating fallacy. I allude to the proposal for firing out the endless rope, a proposal suggested by me, abandoned by me, and long years afterwards taken up by others. If any one who believes in the plan lately exhibited at the East End is so far enamoured of it as to make one little experiment, he will gain wisdom. Let him sketch a cord across a room, and exactly under the cord screw a brass pulley into the floor, having first rove through it a piece of whip cord, or fishing line. Over the cord stretched across the room carry the double line, haul in very tightly, tight as a harp string, and observe what occurs at the point where the double line bears on the cross line. There is a dead lock at once. The double line refuses to render, and the experimenter is faced by the alarming fact that the shooting of the double line over a ship is simply equivalent to firing two single lines attached to one shot, and which means of course disastrous loss of range owing to the increased weight of line to be carried. This was proved to the satisfaction of the Board of Trade about fourteen years ago. You will see from the Parliamentary papers that so long as the Board of Trade saw, or that I saw, the ghost of a chance of final success by having fired a double line over a ship no efforts were spared in the matter, but when utter hopelessness and even alarming damage stared everybody in the face, it was high time to condemn *that* method of sending out a double or rove line.

I am now about to ask the Board of Trade for permission to try at my own expense, and in the presence of their officers, a new method of sending a rove line on board, but by quite a different method from that which I formerly believed in. If a double, or rove line is to be of use, it must be sent on board a stranded ship, and not as is the case with the proposed *mortar* apparatus, over her or beyond her. I now propose to use rockets. I found the mortar inconvenient and dangerous. You can carry a rocket anywhere. A mortar is a barbarous affair except under certain exceptionally favourable conditions.

I am, Sir, truly yours,

THOMAS A. DILLON.

19, Euston-square, London, 15th June, 1875.

TRAINING-SHIPS.

To the Editor of the "Nautical Magazine."

SIR,—The recent correspondence in the *Times*, between Mr. Sadler, the Secretary to the Marine Society ship *Warspite*, and the promoters of a training-ship to be stationed on the Thames for the purpose of training boys for the Mercantile Marine, must have convinced the most uninitiated in nautical matters that Mr. Sadler, in his zeal for the prosperity of the *Warspite*, entirely lost sight of the broader view of the question—viz., providing a steady supply of well-trained boys for our Mercantile Marine, his only fear appearing to be that, should a training-ship for this purpose be established on the Thames—i.e., a training-ship in every sense of the word, one established on a well-organised system, to be placed under Government supervision, and regular periodical reports to be made on the progress of the boys in seamanship—that the better trained boys from such a training-ship would be more eagerly sought after than the boys from the *Warspite*. At present it is very questionable whether we really have a training-ship in the Thames, or in any other of our seaports (excluding the Naval training-ships), that can in any way lay claim to the title of training-ship. A training-ship is doubtlessly an establishment for the purpose of training boys to become sailors. We should be very much surprised on visiting a trade shop for the instruction of boys in any particular trade, if we did not see some preparation for the instruction of the particular trade to be taught; still it will be found that scarcely one of the private training-ships that are presided over by committees (of very good and worthy men, who imagine they are doing great good, and really would do so if they only knew the way) are absolutely doing the work they are intended for—viz., training boys to become sailors, and in some way supply the deficiency of properly-trained seamen for our merchant ships. Nor will these ships ever perform the work required of them until they are regularly put under a Government Inspector, and their shortcomings thoroughly brought to the light of day. If those philanthropic ladies and gentlemen, who so freely give their thousands of pounds to establish these ships, went a little further, and insisted that reports of regular periodical inspections made by competent persons should be furnished to the Committee of Management, giving a true state of the working of these ships, they would then insure a true state of things being placed before them. What is now the case? Certain persons who are friendly to these ships are requested to examine the boys in seamanship, and, of course, good reports of the boys' proficiency follow. Now, what would be the case if these ships were suddenly put under Government inspection? They would all be turned topsy-turvy. New superintendents and instructors would follow, committees would

exercise a little more judgment than at present in the selection of officers, and in a few months these ships would really be doing a great national work instead of, as now, being a sham. If the Government withdrew the educational grant, and these ships were no longer under the inspection of a Government Inspector of education, their scholastic instruction would at once fall to the very low standard at which their seamanship instruction now is.

Let the Government offer a grant for every properly-trained boy for the Merchant Service, and place these ships under a nautical inspector, the copy of the inspector's report to be forwarded to the committees of these ships. No boys to be allowed to leave a training-ship for sea without the Inspector's certificate of qualification. If a system of this sort was once established, each committee would be furnished with a report as to the boys' qualifications in seamanship, as they now are with regard to their qualifications in school work. These periodical inspections would really be an inspection of superintendents and instructors, and give the different committees opportunities for placing qualified men in the room of incompetent ones. When first the naval training-ships were established, each ship was allowed to work on a system of its own; it was very soon discovered that one or two, like the majority of our private training-ships at present, had no system at all. The Admiralty, therefore, very wisely placed them under an inspector of training-ships, who examined them quarterly as to their progress (in what ought, and should be, the first consideration, seamanship), whilst the inspector of schools examined them also quarterly in the school work. Thus a check on the idle and inefficient was thoroughly established.

With reference to the Marine Society's ship, *Warspite*, she is doubtless a very useful institution, but it is very questionable whether she does not aim at too much in hurrying the boys too quickly through the ship; it has the appearance that quantity, and not quality, is aimed at. A boy is seldom in the *Warspite* more than eight months, whereas a boy is generally in a Naval training-ship, from first to last, for eighteen months, and even that is found to be full short a time to be thoroughly trained. A boy leaving the *Warspite* in six or eight months to join a naval training-ship is all very well, because he there undergoes a further training of eighteen months, but a boy joining a merchant ship from the *Warspite*, after only eight months' training, can know little or nothing of his work. It would therefore be better if the *Warspite* did less, and did it better.

OBSERVER.

BOOKS RECEIVED.

The Law relating to Shipmasters and Seamen. By Joseph Kay, M.A., Q.C. London: Stevens and Haynes. 1875.

THE law-books of the present day are mostly of two classes: the one written for lawyers, and only to be understood by them; the other intended for the use of non-professional readers, and generally in the form of handy books. The first, in the majority of cases, is of some benefit, if looked upon merely as a compilation containing the most recent decisions on the subject; whilst the second only aims, and not always with success, at popularising some particular branch of legal knowledge by the avoidance of technical phraseology.

It is rarely that we find a book fulfilling the requirements of both classes; full and precise enough for the lawyer, and at the same time intelligible to the non-legal understanding. Yet the two volumes by Mr. Kay on the law relating to shipmasters and seamen will, we venture to say, be of equal service to the captain, the lawyer, and the Consul, in their respective capacities, and even of interest to the public generally, written as it is in a clear and interesting style, and treating of a subject of such vast importance as the rights and liabilities and relative duties of all, passengers included, who venture upon the ocean; more than that, we think that any able-seaman might read that chapter on the crew with the certainty of acquiring a clearer notion of his own position on board ship.

Mr. Kay dedicates this work, the occupation of ten years, to his brother, Sir James Kay-Shuttleworth, in a few simple words that will, no doubt, go straight home to the heart of many a struggling and ambitious young barrister, waiting vainly in his lonely chambers in the Temple for briefs that may never come.

Taking the whole British Empire, the tonnage of sailing and steam vessels registered in the year 1873 was, we learn in the preface, no less than 7,294,230, the number of vessels being 36,825, with crews estimated, inclusive of masters, at 330,849; but the growth of our mercantile fleet to such gigantic proportions is scarcely attributable to any peculiar attention on the part of the Legislature to its safety and welfare, for, as Mr. Kay justly says, "it is remarkable that in England, the greatest maritime State the world has ever seen, no proper precautions were taken before the year 1850 to protect the public from the appointment of ignorant and untrustworthy men to these important posts"—the command of vessels, "in which property and life are committed to them under circumstances which necessarily confer almost absolute power and at the same time

preclude for long periods the possibility of any supervision." The French, he tells us, had an ordinance as early as the year 1584, requiring the master to be examined touching his experience, fitness, and capacity. But in England the indifference on this subject was more apparent than real; it arose, we believe, out of the dislike of interference with personal concerns and private enterprise which is so strongly marked in our national character, nor must we forget that some of the most glorious achievements in our nautical annals have been accomplished by men not strictly trained to the sea, and this fact, no doubt, contributed to the reluctance manifested by the Legislature to apply the principles of paternal government to the protection of our seamen; for the going and coming of hundreds of thousands over the ocean for the purposes of business or pleasure had then but lately commenced; and, moreover, probably it was feared that too much care for the welfare of our seamen would have the effect of diminishing the hardihood, self-reliance, and daring which had up to that time made them the envy of the world.

In 1854 the Merchant Shipping Act was passed, repealing the Act of 1850. Under its provisions the Board of Trade received its present extensive authority over merchant ships and seamen, Local Marine Boards were constituted for the examination of masters and mates of foreign-going and home passenger ships, Mercantile Marine officers established for the registration of seamen, and Naval Courts for the investigation of complaints against masters, and other matters. Without doubt the result of this system of compulsory examination has been beneficial, and the master may also possess those other qualifications which cannot be subjected to examination. But it is not enough now-a-days that he should be honest, skilful, courageous, and firm; he must also, if he would steer clear of rocks other than those marked on the chart, be something of a lawyer. This, it might seem, would apply equally to all men having the conduct of important interests, and coming into contact with large numbers of men, but to no one else is so large a discretionary power granted, and the very fact that his use of it is not very severely scrutinised, only adds to the caution with which it should be exercised. And then there are many incongruities in his position. He may have a share in a ship, and yet he is but the agent of the other owners; though, if he has no share, and in a case of necessity hypothecate the ship, he also binds himself in a penalty to repay the sum borrowed. We can make no charge of redundancy or omission against our author; but if we were called upon to select any one out of the fifteen parts into which the two volumes are divided as being especially valuable, we should not hesitate to choose that, numbered three, and entitled "The Voyage." There the master will find a succinct and compendious statement of the law respecting his duties, general and particular, with regard to the ship and

its freight from the moment when, on taking command, he is bound to look to the seaworthiness of the ship, and to the delivery of her log at the final port of destination. In Part IV. his duties are considered with respect to the cargo, this being a distinct side of his duplicate character, inasmuch as he is agent of the owner of the cargo just as much as the owner of the ship.

Next in order of position come "Bills of Lading" and "Stoppage in Transitu." We confess that on first perusal we were somewhat surprised to find the subject of the delivery of goods by the master given priority over that of bills of lading; the logical sequence, however, of these matters was evidently sacrificed, and we think with advantage to the author's desire for unity in his above-mentioned chapters on "The Voyage." That this is so is evidenced by the fact that after his seventh chapter on the latter subject he has left a blank chapter with the heading of the former and a reference *ante*. "The power of the master to bind the owner by his personal contracts," "Hypothecation," and "The Crew," form the remainder of the contents of the first volume, of which we should be glad to have made more mention, but it is obviously impossible to criticize in detail a work in which the bare list of cited cases occupies forty-four pages.

The question of compulsory pilotage is full of difficulties, which are well summed up by Mr. Kay in his note to page 763:—"In the United States no ship is bound to take on board a pilot either going in or coming out of the harbour, but if a pilot offers and is ready, the ship must pay pilotage fees whether he is taken on board or not." Ships do not exist for pilots, but pilots for ships, so that this option in the use of the pilot, and obligation in the matter of fees, appears to us to be exactly that solution of the difficulty which should not have been arrived at; and, moreover, it is open to the first objection urged by Mr. Kay against the compulsory system of pilotage, which is, that it obliges many ships which do not require pilots to pay for keeping up a staff for those who do. Seven other cogent reasons, for which we must refer the reader to the book itself, though most of them, indeed, will instantly present themselves to the minds of sailors without even an effort of memory, are noted. Section 388 of the Merchant Shipping Act provides that no owner or master of any ship shall be answerable to any person whatever for any loss or damage occasioned by the fault or incapacity of any qualified pilot acting in charge of such ship within any district where the employment of a pilot is compulsory by law. If he interferes to correct the pilot in the handling of a ship, with the peculiarities of which the latter cannot generally be acquainted, he may render himself and the owners liable in case of accident, and so a premium is offered to his indifference, proof being always required that the damage was occasioned solely by the

pilot's neglect or fault, to entitle the owners to the benefit of this section. The decision in the case of the *General de Caen* well illustrates some of the difficulties surrounding the subject. She was a French ship upon the Thames, where the employment of a pilot is compulsory, and she, therefore, took on board a pilot as well as a waterman to take the wheel in consequence of none of the crew being able to understand English. The waterman put her helm up instead of luffing as the pilot ordered, whereby a barge was run into and damaged. The French owner claimed under Section 389 of 17 and 18 Vic., c. 104. It was held that the pilot was not answerable for the waterman's incapacity or fault; that the pilot gave the proper orders; that it would be contrary to justice to say that the pilot was solely liable for the collision; that the waterman was the servant of the owners, and that they, therefore, were liable. The real question at issue seems to have been whether the English pilot ought to have spoken French or the French ship to have had on board a helmsman who could understand English, and the corollary, when the decision had been given in favour of the former, that the Government officer, when engaging the helmsman, was acting merely as the agent of the French owners.

The master has a large authority over the passengers on board his ship, equal in cases of great emergency to that which he possesses over the crew. Lord Ellenborough has decided—it will comfort intending travellers by sea to hear, especially if this country should again become involved in a war with a nation which, unlike Ashanti and Abyssinia, possesses a navy—that a master exceeded the limits of his authority in placing a passenger who refused to fight on the poop, though willing to do so elsewhere, in irons all night on that particular part of the ship to which he had objected.

It is for the interest and security of commerce and navigation that it should be generally known that the amount of service rendered is not the only or proper test by which the amount of salvage reward is estimated, but the Court will grant to successful salvage an amount which much exceeds a mere remuneration for work and labour in order that the salvors should be encouraged to run the risk of such enterprises and go promptly to the succour of lives or vessels in distress, though they must take care that they do not by their subsequent conduct forfeit their claims to such reward.

That it should be necessary to entice men by money to save the lives of their fellow-creatures is not a matter for congratulation; still it was no doubt to some extent anomalous that formerly, whilst large proportionate sums were paid for the recovery of property for the rescuing of human life unless associated with property, no salvage reward could be recovered. But by Section 458 of the Merchant Shipping Act the pre-

ervation of human life is made a distinct ground of salvage reward, with priority over all other claims for salvage where the property is insufficient, and if the value of the property is not adequate to the payment of the claim for life-salvage alone, the Board of Trade is empowered to award to the salvors such sum as it deems fit, either in part or whole satisfaction.

There is, perhaps, no species of service liable to a greater variety of circumstances under which it can be performed than salvage. Consequently, we cannot be surprised that questions of this kind frequently come before the Courts, and that the number of decided cases is very large; but Mr. Kay has succeeded in an admirable way in extracting the main points connected with each case, and in presenting them in as few words as possible. Of course, fuller information may sometimes be required, but the reader will then know where to find it.

In conclusion, we can heartily congratulate Mr. Kay upon his success. His work everywhere bears traces of a solicitude to avoid anything like an obtrusive display of his own powers at the expense of the solid matter pertaining to the subject, whilst those observations which he permits himself to make are always of importance and to the point; and in face of the legislation which must soon take place, whether beneficially or otherwise, we think his book, looking at it in other than a professional light, could scarcely have made its appearance at a more opportune moment.

Instructions to Officers in the British Possessions Abroad relating to Masters and Seamen of the Mercantile Marine and Casualties to British Ships. London: Eyre and Spottiswoode. 1875.

THIS is a little book of 107 pages only, of which four are occupied by the title and index, and sixty-two by appendices, so that the instructions themselves are contained in the short space of forty-one pages. From the constant reference to the Board of Trade throughout, we presume that the instructions in question are issued by that department, but there is no clue in the title to that or any other authority. The title of the persons to whom the instructions are issued has also a very vague sound—who and what is an officer in a British Possession abroad?

A short acquaintance with the instructions themselves has, however, enabled us to gain a more definite knowledge of the subject: indeed, we had not to go beyond the first two paragraphs before a good deal of light was thrown on it.

From the first we learnt—not, however, for the first time—that “by the Merchant Shipping Act, 1854, officers of Customs, or other officers appointed for the purpose in the British Possessions abroad, are required to exercise certain functions in respect of the masters and crews of

merchant ships," and from the second, that "the duties in question can be deputed by the Government of the Colony or Possession to any of their officers. In one Colony the officer is a shipping master, in another a collector of Customs, in another a registrar of shipping, and these instructions are for the guidance of any such officer, whatever Colonial office he may hold."

From these paragraphs, allowing for some difficulty in understanding what is a Colony and what is a Possession, we gather a clear idea of the object of the instructions and the persons to whom they are addressed.

We now come to their duties, which appear not to be entirely confined to the functions imposed upon them by the Merchant Shipping Acts, and may be therefore divided into two heads—1. Required ; and, 2. Requested.

The "required" duties appear to be the following :—Superintending the engagements and discharges of seamen of ships "registered either in the United States or in a ship registered in some other British Possession," "then that where the engagements and discharges takes place ;" the relief of distressed seamen (the "unseaworthies" for whom it appears from correspondence recently presented to Parliament that the British taxpayer pays £80,000 a year) ; and the proper collection and realisation of the wages and effects of deceased seamen.

The "requested" duties appear to be still more numerous. The "officer," in addition to furnishing elaborate returns of every casualty on the coast of a Possession, and keeping an equally elaborate register of all seamen coming to his port who belong to the Royal Naval Reserve, being expected to keep in his head all the provisions of the complicated Imperial law with regard to merchant shipping, and to keep an eye on every British ship and seaman that comes within his district, and to note, enquire, inspect, and report anything and everything that goes wrong, or is in any way of interest to the shipping community, or to the Imperial Board of Trade.

But if the requisitions and requests are numerous, we are bound to add that they are clear and short, and that in the main it appears to be as much to the interest of a Colony or British Possession as to that of the mother country, to comply with them.


The Sailors' Pocket Book. By Commander F. G. D. Bedford, R.N. Second edition. Revised and enlarged. J. Griffin & Co., London and Portsmouth. 1875.

Nothing succeeds like success, and the necessity for a second edition of this most valuable little book shows that Commander Bedford's success in constructing the work is the cause of it. There are some additions of importance which make the new edition still more serviceable than the former one.

How Ships are Lost, and why so Difficult to Man them with Seamen. By "The Octopus," Messrs. Greens, Peninsular and Oriental Company, and White Star line. London : J. D. Potter, 30, Poultry.

THIS is a pamphlet, well printed and well got up. It is a third edition. "The Octopus," in his preface, says that his ideas have come to him "rather from the deck and the cabin than from the study or book-shelf." It is always gratifying and very often curious to read what practical men of "The Octopus" class write, and for this reason we recommend his book to our readers. It contains many hints and suggestions, and amongst them of course some that are antiquated or exploded. His opinions are, however, always very decided, and his language positive—for instance, he says, "If shipowners were allowed to insure for two-thirds only of the value of their ships, our wreck list would soon become very small." If he would read the evidence and report of the Royal Commission on this point he would find something worth study. He is under the impression, which is rather odd for a practical man, that the dietary scale for merchant ships is a "Government scale;" and he thinks it "might very well be altered." When we assure him that it is not a Government scale, and that he has himself power to alter it for all ships he sails in, he will, we trust, put his belief into practice. "The Octopus" writes against advance notes, and is severe on crimps, Jew clothiers, &c., whom he calls "scoundrels." This may be true, for he must have felt from the bottom of his heart when he wrote the word, but there is this to be said (which "The Octopus" does not say), that the crimp, grogman, and brothel proprietor have votes, and are powerful in seaport towns, and a combination of them might unseat a member or two at the next election, and a combination of seamen (who have no votes) could be of no avail to re-seat them. The absence of the power of voting, influences the social, through the political world. The just indignation of "The Octopus" against the "scoundrels," as he calls them, is, however, a pure waste of force. The sailor is in bondage to the crimp, and *must* remain there. The crimp and his harem, now firmly rooted in Great Britain, will, we fear, flourish as a recognized institution even after the church is disestablished. We suppose "The Octopus" gives his pamphlet away gratuitously, as there is no price stated on it. If this is so, we would advise our readers to send a stamp to Messrs. Potter and obtain a copy.

FOG-SIGNALS.

INCE the wreck of the *Schiller* in a thick fog, half-a-mile from a lighthouse, the light from which was completely obscured, the subject of fog-signals has been invested with some public importance. The matter is not one which, under ordinary circumstances, would be of general interest; but the catastrophe of the *Schiller* has brought home to the public mind the fact, that a sound signal might have been of use in warning the vessel of her dangerous proximity to the rocks. The opportunity has been taken by sundry persons to make public their opinions and to offer various suggestions, but it is not surprising to find that these persons, who have been so ready with their opinions and suggestions, have shown by their utterances that their knowledge of the subject is extremely limited, and consequently that their suggestions are, in the highest degree, impracticable.

The lighthouse authorities of this country have, for years, had this question of fog-signals before them. From a lecture recently given at the Royal United Service Institution, by Admiral Sir Richard Collinson, an Elder Brother of the Trinity House, we learn that the necessity for fog-signals has grown with the growth of our shipping. The Admiral says:—

“In the days when our own merchant fleet was not so extensive as now, when steam ships were almost unknown, and when the number of foreign ships visiting our shores was extremely small, the necessity for guarding dangerous localities in foggy weather was not very marked, because vessels, as a matter of fact, generally hove-to if fog or very thick weather came on while they were in the vicinity of land. Here and there on salient points of the coast, with deep water close to, bells were established, but it is more than probable that they were seldom or never practically serviceable.

“But as maritime enterprise and discovery progressed, trade and navigation increased in like measure; to this increase the introduction and development of steam power gave a great impetus, insomuch that the darkness of night ceased to be a hindrance to sea voyaging, and the demand also arose for some sort of guiding signals to enable vessels to continue their courses during fog and thick weather. Thus, the question of fog-signals came before those to whom the duty of marking our coasts is entrusted. I allude, of course, to the ancient Corporation of the Trinity House, of which I have the honour to be a member. It is needless for me to bring before you the numerous and many of them most unpractical propositions which have from time to time been brought

before the Trinity House, on the subject of fog-signals. It is sufficient to say that, previously to 1872, actual knowledge on the subject was extremely vague, both in regard to the production of suitable sounds and the actual effect of any such sounds when produced. Varying and often irreconcilable statements were made as to the distances at which sounds of different kinds were audible, but trustworthy evidence on the subject did not seem to exist. The numerous proposals made to the Elder Brethren of the Trinity House, were generally characterised by crudeness and insufficient knowledge of what was required, and in accordance with the rule which the Trinity House invariably follow in all matters relating to guiding signals, they were unable to adopt proposals which were based on uncertain foundations, and which gave little promise of being practically serviceable to the mariner. But, although, definite knowledge in regard to the application of sound for signalling purposes was in so unsatisfactory a condition, the Trinity House always kept in view the ultimate possibility of utilising sound in the manner desired, and as far as they reasonably could (being controlled in matters of expense by the Board of Trade), encouraged enquiry into the subject, and themselves at various times made tentative efforts towards bringing the question into a practical shape."

In our volume for 1874, will be found sundry accounts of the recent experiments and the general progress made in regard to fog-signals. Certain conclusions have now been arrived at, and the practical result is, that fog-signals are being established fast and furiously around the coast of Great Britain. As regards setting up fog-signals at isolated light-houses exposed to the direct violence of the waves, about which there has been so much recent talk, there are difficulties in the way which at present appear to be almost insuperable; but if it is possible to erect an effective sound signal at such places, we may be sure that the indefatigable engineer of the Trinity House, Mr. Douglass, will find out how it is to be done.

As far as can be gathered from a recently published Parliamentary paper, it seems that the Siren principle is to be adopted for all the signals now in hand, this being in accordance with the knowledge gained in the experiments carried out under the direction of Dr. Tyndall. It appears, also, that the Trinity House being anxious to have other distinctive kinds of sound, so that each signal may be enabled to proclaim its own individuality, have asked the War Office to help them in the construction of a special form of gun, the sound of a gun report being very distinct from a siren blast. Most of our readers are well aware of the difficulty of picking up the sound of a gun at a distance; it is a short dull thud, much resembling any of the countless noises that are to be heard on board a steamer, and it is also a sound which a puff of wind in the ears

is quite likely to obliterate; and as it has been customary in using the gun as a fog-signal to fire only once every fifteen minutes, the liability of the sound being valueless is greatly increased. Now the blast of a siren lasts for several seconds, and it seems to have been thought that if several reports of a gun could be made to follow each other with greater rapidity, it would be much more serviceable and trustworthy. Accordingly, a gun has been designed in the Royal Gun Factories which can be fired every five minutes, but this, although a step in the right direction, does not seem to us likely to meet the case, for five minutes interval between two gun reports is nearly as bad as fifteen minutes, in a fog. We think, perhaps, a sort of mitrailleuse of reports, an arrangement by which a very rapid succession of reports could be made, might be more serviceable. Only then the consideration of expense would have an important bearing on the question. Altogether we must confess it appears at present very doubtful whether the gun can be made to be as safe, efficient, and easily worked as the siren fog-signal. Colonel Campbell and Major Maitland have apparently gone into the matter with energy and thoroughness, but so far as we can judge from the reports of their trials, they seem only to have obtained some useful knowledge as to the best form of mouth for a noise-making gun, and provided means for greater ease in loading and firing, while as regards bringing the peculiarity of the gun sound into service so that it may give as effective and prolonged a signal as a siren, it does not seem that any advance has been made. As far as loudness goes there is scarcely any limit to its development, it is only a question of expense, a large quantity of powder will make more noise than a smaller charge. At this point gun-cotton steps in for competition with gunpowder, and this, besides being more easily manipulated, gives a much louder sound as compared with an equal weight of powder, but in regard to expense it is twice as dear as powder. The whole question in regard to guns as fog-signals is still under consideration, and the results will no doubt be made public in time.

It is impossible to estimate with any accuracy what will be the real practical value of the fog-signals when set up, but in a general way it may be safely assumed that masters of vessels will find them of considerable service when near land in thick weather. We should say that their chief value will be for warning, not for leading purposes. Directly the wailing of the siren is heard, mariners should keep away and never go in nearer to the sound. Sirens, both ashore and afloat should be always kept at a respectful distance by sailors.

Speaking of the results of the experiments at South Foreland, Sir Richard Collinson observed that—

"In reference to the knowledge gained as to the effect of different meteorological conditions upon the transmission of sound through the atmosphere, I may remark that in many respects nautical men will find it of great value, independently of its connection with fog-signals. It is well known that in the practice of navigation not a little is done by means of sound—the use of speaking-trumpets for hailing; the gun-signals to indicate distress, &c.; of steam-whistles for signalling, is more or less common among merchant ships, and in the Royal Navy also a great deal is done by means of sound-signals. By the results now obtained mariners will undoubtedly understand better how to make such signals effective, if they will give consideration to the influence exercised upon sound by the various atmospheric conditions. Here is a small and very effective horn which is used when fog comes on suddenly until the fog-signal is in proper working order. This instrument is really a good one, and should be used on board ship instead of the poor weak instruments so often seen on board, and therefore I think is worthy of being brought to your notice. It is patented in America, and I think here also, by Mr. Anderson, the inventor."

These horns, which are really very good and inexpensive, may be obtained from Messrs. G. and J. Oliver, 37, Wapping Wall.

ROCKET SERVICES, WINTER 1874.

IN connection with the first article in the present number, we have just obtained the following information from a trustworthy source, and we beg to express our thanks for the obliging courtesy which has enabled us to substantiate our assertions with facts such as the following.

It is well to bear in mind that services with the rocket apparatus are generally rendered in the teeth of a gale, and often at night during absolute darkness, and in hail, frost, and snow.

Four lives were saved at Blyth Haven on the 29th November, 1874. The time after arriving at wreck and landing the first man was 25 minutes. The time from firing first rocket to effecting communication was 10 minutes. Time between firing first rocket and landing first man, 20 minutes. The whole were landed in 55 minutes after the apparatus arrived at wreck.

Seven lives were saved at Coatham on the 9th December, 1874. The time after arriving at wreck and landing the first man was 30 minutes. Time between firing first rocket and landing first man was 15 minutes.

The whole were landed in 40 minutes after the apparatus arrived at wreck.

Seven lives were saved at Dungeness on the 15th December, 1874. The time after arriving at wreck and landing the first man was 15 minutes. The whole were landed in 40 minutes after the apparatus arrived at wreck.

Two lives were saved at Lowestoft on the 11th December, 1874. The time after arriving at wreck and landing the first man was 20 minutes. The time from firing first rocket to effecting communication was 10 minutes. Time between firing first rocket and landing first man 15 minutes. Both men were landed in 25 minutes after the apparatus arrived at wreck.

Six lives were saved at Lowestoft on the 16th December, 1874. The time after arriving at wreck and landing the first man was 15 minutes. The time from firing first rocket to effecting communication was 5 minutes. Time between firing first rocket and landing first man 10 minutes. The whole were landed in 25 minutes after the apparatus arrived at wreck.

Fifteen lives were saved at Mullion on the 8th December, 1874. The time after arriving at wreck and landing the first man was 14 minutes. The time from firing first rocket to effecting communication was 10 minutes. Time between firing first rocket and landing first man 12 minutes. The whole were landed in 20 minutes after the apparatus arrived at wreck.

Six lives were saved at Seacliff on the 29th December, 1874. The time after arriving at wreck and landing the first man was 30 minutes. The time from firing first rocket to effecting communication was 5 minutes. Time between firing first rocket and landing first man 20 minutes. The whole were landed in 50 minutes after apparatus arrived at wreck. This apparatus was on this occasion worked by a farmer and his labourers. No Coastguard men at station.

Five lives were saved at Sunderland on the 26th November, 1874. The time after arriving at wreck and landing the first man was 15 minutes. Time between firing first rocket and landing first man 10 minutes. The whole were landed in 30 minutes after the apparatus arrived at wreck.

Five lives were saved at Whitby on the 29th November, 1874. The time after arriving at wreck and landing the first man was 20 minutes. The time from firing first rocket to effecting communication was one minute. Time between firing first rocket and landing first man was 15 minutes. The whole were landed in 35 minutes after the apparatus arrived at wreck.

The above cases are a few only of those in which the apparatus has been used in 1874.

ARCTIC EXPEDITIONS.

SINCE the preceding paper on the Arctic Expedition has been set up, the following particulars concerning the voyage of the *Pandora* have been published, which we now reprint as completing the record to the latest date:—

"The *Pandora* was towed out of the Southampton Docks at twenty minutes to three on the afternoon of Wednesday, 23rd June, her captain and whole crew being on board. The departure was witnessed by a large concourse of people, conspicuous among whom were the young wives of several of the sailors. The ensign of the Royal yacht squadron was flying from the mainmast of the schooner, and at her stern fluttered the Union Jack, with the Cross of St. George. The vessel, as she proceeded slowly outwards to the Solent, looked exceedingly neat and trim. Her sailors were attending to their duties in apparently the best of spirits. Noticeable among the faces, glistening under the bright sun which scorched the deck, was that of Esquimaux Joe, who was with Captain Hull in the *Polaris*, a man who in appearance is more like a native of China than of any other part of the world. To quote the words of one of his comrades, 'he knows nine languages, was in England 22 years ago, is now about 86 years of age, and is now suffering from a cold which he humourously says himself, he does not expect to get rid of until he finds himself in the "cold regions."' The oldest man on the *Pandora* is Tom Florence, captain of the hold, who has been nineteen years 'in the business.' This veteran of over three score winters carries with him a silver watch, having inscribed upon it words showing it was the gift of Lady Franklin for services rendered by him in searching for her gallant husband. There are two quartermasters in the *Pandora*—Myles and Timson—both of whom have served for many years in the Royal Navy. The ship steward is Mr. Edwards, the chief engineer Mr. Ball, and the principal harpooner is a man named Randersom, who has over and over again taken duty in whale ships. Probably the most acclimatised Arctic voyager, however, is the cook, Shelton, who has been twenty-seven years away in the Polar seas. The *Pandora* has been thoroughly refitted for this cruise, which may last as long as eighteen months. This is the time the men have bound themselves to serve. Every rope and bolt is new, while the masts, three in number, have been newly-spliced, and the yards shortened and re-sailed. Although she has been strengthened in every part, and although she is so heavily laden that she draws ten and a half feet of water, her whole appearance, as she glided out of port to-day, suggested symmetry and delicacy of outline. She

has been used in times past as a despatch boat, and her smart and tidy build are sufficient criterions to the eye that she did her work rapidly. The usual commander's cabin has been divided for the accommodation of Captain Allan Young and Lieutenant Lillingston. In each cabin is a well-stocked library, and on the walls are photographs and landscapes. Amongst the other articles put on board the yacht were a quantity of scientific instruments and books sent down from London, and an organ which has a somewhat remarkable history. In one of the early Franklin search expeditions, this organ, a gift of the late Prince Consort, was first taken away to an Arctic latitude; since that time it has done duty in four other Arctic expeditions, including the voyage of the *Fox*. A silver plate has now been fixed upon it which tells of its adventures, and its musical properties have been renovated at a large outlay by Captain Young for this expedition. Outside the captain's cabin, the mess room of the *Pandora* is situated, and from the four sides of this chamber are constructed cabins for the members of the scientific staff. It is understood that the first point of call will be the Shetland Islands, where a supply of coal will be taken on board."

TO CORRESPONDENTS.

D. D. L., GLASGOW.—Your MS. has unfortunately been mislaid. If you will be so good as to send us another copy, it shall have careful consideration. Your letter being anonymous, has not received that attention which authenticated communications demand. We prefer to know who our correspondents are, merely as a matter of *bonâ fides*, not for publication.

HER MAJESTY AND THE ROCKET APPARATUS.—We have great pleasure in announcing that Her Majesty has been graciously pleased to direct that the Metal Tablets, referred to in the Official Advertisement in our columns, shall be placed on board Her Royal Yacht.

NEW LIGHTHOUSES.—It is said that two new lighthouses are about to be erected—one at Morte Point on the North Coast of Devonshire, and another on Durlstone Head, Dorset. Both these lights will be of the greatest service in the respective localities.

FISHERIES IN JAPAN WATERS.

AMONGST the correspondence contained in the *Japan Mail*, there is a description given by Capt. H. C. St. John, H.M.S. *Sylvia*, of the fisheries at Yesso. The circumstances are so unusual, that Capt. St. John was induced to send a few extracts from notes made by him when surveying the eastern parts of Yesso. The appearance presented by the land was decidedly unfavourable for agriculture, the whole country being covered with forest tangled undergrowth and coarse bamboo grass. Snow lay thick on the ground throughout May, and had not disappeared in June, whilst on the higher ground it still lay in August; the soil was hard and frozen until June, and frost again sets in in September. The temperature of the sea was 37 Fahr., at Midsummer. Notwithstanding, no language can express the abundance of fish. In May and June the sea teemed with herrings, and the shore, along the shallow waters, might be seen covered with them. They were literally pushed thither, driven out of the water high and dry, by the mass of fish behind them, and this for many miles. Seagulls, eagles, crows, foxes, and dogs, during the day, and bears and wolves during the night, flocked here, and fed upon the fish to their hearts' content. It certainly was a wonderful sight—whales and seals played about the ship in the most fearless manner. Flatfish abounded; salmon had not commenced to run. Amidst this abundance, it was lamentable to see the waste of fish by the Japanese. The mode of catching the herring was simple enough: a net, stake-net fashion, was run off from the shore for 200 yards, terminating in a bag. When the settlers wanted fish, all they did was to go off in a boat, lift the bag, and allow the contents to fill the boat. A railed spot on shore was the receptacle usually kept filled to about eight feet deep, by forty or fifty in length and breadth; ten men or twenty, as a rule, worked away at this, many only picking out the hard roe; this was salted, for sale in the provision shops throughout Japan. The other fish, besides that from which the hard roe has been taken, was flung aside to rot. A little, but a mere nothing, was done in the way of boiling down for manure. This was all. Now, at Numero, and along within the Yesso Straits, thousands of people could find ample employment in curing fish—catching they hardly require.

The herring found in the Yesso waters is larger and coarser than our own, and lives in a temperature that the British fish would not thrive in. The Arctic stream washes all the shore of Yesso. A portion of the Kuro Sino, the western and southern, cuts Yesso in two. By drawing a line

from Cape Zerimo to the mouth of the Ishcari, and devoting all the N. and N.E. parts to fishing, and the other, the smaller half, the S.W. corner, to agriculture, the results would, without doubt, prove remunerative. At Akashi Bay, where there is a good harbour, herrings and a white species of fish were boiled down more systematically and in a far larger quantity. The process is simple enough. After boiling, the fish is pressed by a rude but effective lever and windlass, afterwards allowed to dry, packed in straw bags, and sent south, where it is used for manure.

SLIDE RULE FOR THE TONNAGE OF YACHTS.—MESSRS. G. L. WATSON AND CO., GLASGOW.—This will be of some use to those yachtsmen whose arithmetical capacity is not equal to multiplication and division of fractions. For other persons the computation of a yacht's tonnage is not such an hourly task that it will be considered worth while to carry about, even the neat little scale provided by Messrs. Watson, to save a few figures. The rule given for the tonnage of cutters is that used for all yachts whatever by the Thames Club, as is, we believe, under re-consideration just at present. To make the slide rule complete in itself, it would be desirable to state on it the points to which the measurements should be taken. As there is often some misapprehension on this subject, we give the official rule of the Thames Club. The real difficulty in carrying it out is not the computation, which is simple enough, but the measurement of the length in the case of schooners, the stem being often so covered up that it is not easy for any but a draughtsman to mark the spot from which the measurement should be taken.

Rule of the Royal Thames Yacht Club.

1. Length is taken from fore-side of main stem at the height of the deck to after-side of stern-post.
2. Breadth is the breadth extreme of the vessel above or below the water-line.
3. Multiply the difference between the length and breadth by the breadth, this product by half the breadth, and divide by 94 for the tonnage.

$$\text{Tonnage} = \frac{(L - B) B \times \frac{B}{2}}{94}$$

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
148	BENGAL—Rangoon—China-ba-Keer	Intended Alteration in Lighthouse.
149	ADRIATIC—Kalamota Channel—Port Siano	Establishment of a Harbour Light.
150	ADRIATIC—Veglia Island—Port Malinaka	Alteration in Harbour Light.
151	ADRIATIC—Parvicchio Island—Point Maistro	Exhibition of Permanent Light.
152	ADRIATIC—Dalmatia—Port Gravosa	Alteration in Harbour Light.
153	ADRIATIC—Trieste Bay—Port Rose	Alteration in Light.
154	ADRIATIC—Sabbioncello Peninsula—Orebbiccio	Exhibition of a Temporary Harbour Light.
155	MEDITERRANEAN—Greece—Navarin Bay—Pylos Island	Nature of Light now Exhibited.
156	MEDITERRANEAN—Grecian Archipelago—Mityleni—Sigri	Alteration in Light.
157	MEDITERRANEAN—Spain—Cartagena	Position of a Wreck.
158	AUSTRALIA—Inner Passages and Torres Strait	Establishment of Beacons.
159	EASTERN ARCHIPELAGO—Flores Sea—Liban or Babi Island	Sunken Reef off.
160	HINDOSTAN, WEST COAST—Karachi	Light at end of Breakwater.
161	AFRICA, WEST COAST—Dakar Harbour	Establishment of a Harbour Light.
162	CAPE VERDE ISLANDS—St. Jago—Porto Praya	Establishment of a Harbour Light
163	NEW ZEALAND—Middle Island—Nelson	Light at present Exhibited.
164	CAPE BRETON ISLAND—St. Anne Bay—Ciboux Island	Alteration in Light.
165	GULF OF ST. LAWRENCE—Prince Edward Island—North Point	Alteration in Light.
166	IRELAND, EAST COAST—Ridge Shoal	Alteration in Buoy.
167	IRELAND, EAST COAST—Lough Carlingford—Hellyhunter Rock	Establishment of a Bell-Buoy.
168	UNITED STATES—St. Helena Sound—Hunting Island	Establishment of a Light.
169	NORTH AMERICA, WEST COAST—San Francisco Bay—Nooday Rock	Discovery of Additional Pinnacles.
170	NORTH AMERICA, WEST COAST—Cape Mendocino	Discovery of a Sunken Rock.
171	ADRIATIC—Italy—Port Bari	Alteration in Light.
172	ADRIATIC—Dalmatia—Spalatro	Establishment of Leading Light.
173	CHINA, EAST COAST—Amoy—Tsing-sen Island	Intended establishment of a Light.
174	ENGLAND, EAST COAST—Kentish Knock Light-Vessel	Correct Position.
175	NORTH SEA—River Ems—Borkum Flat	Intended Light-Vessel.
176	IRELAND, EAST COAST—Wicklow—Breaches	Discovery of a Bank.
177	MEDITERRANEAN—France—Toulon	Harbour Lights.

NAUTICAL NOTICES.

148.—BENGAL.—*Burmah.*—*Rangoon.*—*China-Ba-Keer.*—On the 1st October, 1875, the revolving light will be discontinued, and a *fixed* white light will be exhibited from a vessel moored in $3\frac{1}{2}$ fathoms, at low water.

springs S.S.E. $1\frac{1}{2}$ E., distant $5\frac{1}{4}$ miles from China-Ba-Keer. This temporary light will be 48 feet above the sea, and should be seen 9 miles. A blue light will be burnt from the vessel *every hour* between 8 p.m. and 5 a.m. On the 1st of May, 1876, it is intended to exhibit a light from a screw-pile lighthouse now being erected, instead of the one on the shore, near the intended position of the temporary light-vessel, in 12 feet at low water springs, elevated 85 feet above high water, and should be seen 15 miles. The light will be a *revolving* light, of the first order, attaining its greatest brilliancy *every minute*.

Caution.—In steering for the light-vessel, or the new lighthouse, when erected, ships should not bring them to bear to the eastward of N.E., nor to the southward of S.W., and should not approach them within a distance of 2 miles.

149.—ADRIATIC.—*Kalamota Channel.*—*Port Slano.*—A *fixed green* harbour light is now exhibited at the entrance of Port Slano.

150.—ADRIATIC.—*Veglia Island.*—*Port Malinska.*—The fixed white light heretofore exhibited on the mole head at Port Malinska has been changed to a *fixed green* light.

151.—ADRIATIC.—*Parvicchio Island.*—*Point Maistro.*—With reference to Nautical Notice, No. 209 (December, 1874), on the establishment of a temporary light on the north-west point of Parvicchio during the construction of a lighthouse, notice has been received that the permanent light is now exhibited on point Maistro. The light is a *fixed white* light, elevated 67 feet above the sea, and should be seen 10 miles. The light is exhibited from an iron frame attached to the keeper's dwelling. Position, lat. $44^{\circ} 56' N.$, long. $14^{\circ} 46' E.$

152.—ADRIATIC.—*Dalmatia.*—*Port Gravosa.*—The red and white light heretofore exhibited on a small pier or mole in the port of Gravosa has been changed to a *green* light.

153.—ADRIATIC.—*Trieste Bay.*—*Pirano Bay.*—*Port Rose.*—The fixed white light heretofore exhibited on point St. Bernardino, Port Rose, has been changed to a *fixed green* light.

154.—ADRIATIC.—*Sabbioncello Peninsula.*—*Orebiccio.*—A temporary *fixed white* light is now exhibited from a lantern at the extremity of the mole at Orebiccio; it is 24 feet above the sea.

155.—MEDITERRANEAN.—*Greece.*—*Navarin Bay.*—*Pylos Island.*—The light now exhibited on the south extreme of Pylos island, is a *fixed red* light, elevated 116 feet above the sea, and should be seen 5 miles.

156.—MEDITERRANEAN.—*Grecian Archipelago.*—*Mityleni.*—*Sigri.*—The light exhibited at Sigri island, west extreme of Mityleni, is a *revolving white* light.

157.—**MEDITERRANEAN.**—*Spain.*—*Cartagena.*—The Spanish iron-clad *Tetuan* now lies sunk in $6\frac{1}{2}$ fathoms water in Cartagena harbour, with the following marks and bearings, viz.:—St. Leandro just open north of Fort San Julian, S.E. by S.; West end of breakwater (Laja), S.W. by W. $\frac{3}{4}$ W.; Point under Fort Sta. Anne, S. $\frac{3}{4}$ W. The wreck lies N.E. and S.W.; the foremast, some portions of the bulwarks and two funnels appear above water. No light is placed to mark the position.

158.—**AUSTRALIA.**—*Inner Passages and Torres Strait.*—With reference to Nautical Notice, No. 75 (March, 1875), on the establishment of beacons to facilitate the navigation of the Inner route leading to Torres strait, notice has been received, that the following additional beacons have been erected in the Inner route, and in Prince of Wales channel, Torres strait:—

Vessels bound north and west, must leave those beacons which are *red* and *triangular* on the *port* hand and those that are *black* and *square* on the *starboard* hand.

Port side, bound north and west, red and triangular.—On a sand bank, dry, with rocks, E.S.E., distant $2\frac{1}{2}$ miles from Look-out point. On Ipili reef.

Starboard side, bound north and west, black and square.—**X** reef, north-west end. **Z** reef, west side. **N W** reef, Hammond rock bearing S.W.; Ince point bearing E. by S. $\frac{1}{2}$ S.

A small *red* beacon has been placed upon a portion of a wreck lying N.N.E. one quarter of a mile from Ipili reef.

Cole Islands.—**r** reef. This beacon, referred to in the above quoted Nautical Notice, has been shifted to the detached rock lying one quarter of a mile N.E. of it.

159.—**EASTERN ARCHIPELAGO.**—*Flores Sea.*—*Liban or Babi Island.*—The commander of the mail steamer *Normandy* reports having struck upon a reef extending about three-quarters of a mile from the south end of Liban or Babi island. The following bearings were taken from the vessel when aground, viz.:—Detached rock off south end of Liban, N.E. by E.; Western point of the island, just open of the S.W. point, N. $\frac{2}{3}$ W. The reef did not dry at low water but appeared to extend to some distance from the western side of the island; it is steep-to, there being 20 fathoms within half a cable. A break was also observed on what appeared to be a sunken rock lying about 3 miles to the eastward of the south point of Liban island.

160.—**HINDOSTAN.**—*West Coast.*—*Karachi.*—A *red* light is now exhibited at the outer extremity of the breakwater extending from Manora point.

161.—AFRICA.—*West Coast.*—*Dakar Harbour.*—A light is now exhibited from an iron pillar at the extremity of the east pier of Dakar harbour. The light is a *fixed white* light, elevated 15 feet above high water, and should be seen $3\frac{1}{2}$ miles.

162.—CAPE VERDI ISLANDS.—*St. Jago Island.*—*Porto Praya.*—A small *fixed white* light is exhibited on the north point of Quail island; it should be seen 4 miles.

168.—NEW ZEALAND.—*Middle Island.*—*Nelson.*—The Boulder bank lighthouse is situated on the bank or island, 8 to 6 feet above high water, $1\frac{1}{2}$ cables E. by N. of the position previously assigned to it. The light shows *red* between the bearing of E. by N. (the south limit of the white light), and N.E. by N., over the approximate position of the outer white buoy. The two beacons on the east shore for entering Nelson haven are—*Upper Beacon.*—*White*, showing a *white* light at night. *Lower Beacon.*—*Red*, showing a *red* light at night. The light on the pilot house is discontinued. When a vessel is known to be approaching Nelson haven at night, a light is exhibited on the beacon off Haul-ashore island. The clump of trees hitherto used as a mark for crossing Nelson bar has disappeared, but a large white house on the site of the clump may be used in its stead; it is, however, a difficult mark for a stranger. The Waimea river is reported to be rapidly closing, the south bank silting up to the northward.

164.—CAPE BRETON ISLAND.—*St. Anne Bay.*—*Ciboux Island Light.*—The light has been changed from a revolving red and white light to a *revolving red* light showing a *flash every minute*.

165.—GULF OF ST. LAWRENCE.—*Prince Edward Island.*—*North Point Light.*—The light has been changed from a fixed white light to a *revolving white* light, showing a *flash every minute*.

166.—IRELAND.—*East Coast.*—*Ridge Shoal.*—A bell-boat buoy (lately removed from Daunt rock) has replaced the bell-buoy marking the Ridge shoal, off South rock, about 6 miles north-eastward of the entrance of Lough Strangford.

167.—IRELAND.—*East Coast.*—*Lough Carlingford.*—*Hellyhunter Rock.*—The bell-buoy removed from the Ridge shoal has replaced the buoy marking the Hellyhunter rock off Lough Carlingford bar.

168.—UNITED STATES.—*St. Helena Sound.*—*Hunting Island.*—A light is now exhibited from a lighthouse recently erected on the north end of Hunting island, south side of the entrance to St. Helena sound. The light is a *flashing white* light of the second order, showing a *flash every half minute*, elevated 182 feet above high water, and should be seen 17 miles. The lighthouse is conical in shape, painted *white*

from the base to the height of the foliage in the back ground, and black above that line. Approximate position, as given, lat. $32^{\circ} 28' N.$, long. $80^{\circ} 25' W.$

169.—NORTH AMERICA.—*West Coast.*—*San Francisco Bay.*—*Noonday Rock.*—On examining Noonday rock for the purposes of blasting, two pinnacles were found in its immediate vicinity over one of which 14 feet was found at low water, with deep water between them. These dangers form one with Noonday rock, which is marked by a buoy. As it is possible that an irregular ridge may connect these pinnacles of Noonday rock, with North Fallaron island, large vessels are cautioned not to pass between them until a more complete survey of the locality has been made.

170.—NORTH AMERICA.—*West Coast.*—*Cape Mendocino.*—A sunken rock has been found to exist off Cape Mendocino between the Cape and Blunt reef. The rock is about one yard in diameter, and has 6 feet on it at low water; it lies S.W. $\frac{3}{4}$ W., distant $\frac{1}{10}$ miles from the lighthouse.

Note.—The dangers lying off Cape Mendocino are characteristic of several points on the coast, and until thorough surveys are made and sailing directions given, vessels should not attempt a passage inside of outlying rocks, and should also give them a good berth in passing outside.

171.—ADRIATIC.—*Italy.*—*Port Bari.*—The following alteration has been made in the red light at the end of the mole of the new port of Bari, viz. :—The light is obscured within the bearings of N.W. by W. through west and south, to S.S.E. $\frac{2}{3}$ E. A bell-buoy, painted white, has been moored in 6 fathoms at the extreme of the base of the new portion of the breakwater now in construction; the buoy lies in the direction of the breakwater, 380 yards from the completed part. Three wooden buoys are moored between this bell-buoy and the end of the mole.

Note.—Vessels from the eastward should steer for the light on San Cataldo point, until the red light of Bari is seen.

172.—ADRIATIC.—*Dalmatia.*—*Spalatro.*—A *fixed green* light is now exhibited on the shore near the Castello, at port of Spalatro, which, in line with the red light on the mole, leads over the position of the outer extremity of the breakwater in the course of construction from Boticella point.

173.—CHINA.—*East Coast.*—*Amoy.*—*Tsing-seu Island.*—A lighthouse is now in the course of construction on the northern slope of Tsing-seu island, entrance of the outer harbour of Amoy. The light will be *fixed*, of the fourth order, showing a white light between the bearings about N.W. $\frac{3}{4}$ W. through west and south, to S.E. $\frac{1}{2}$ E., and a *red* light over the Chauchat rocks and the Taepan shoal; it will be elevated 125 feet

above the sea, and the white light should be seen 15 miles. The tower will be built of stone and brick, octagonal in shape, 93 feet high, and painted in alternate red and white vertical stripes, and the dwellings white. Approximate position, lat. $24^{\circ} 22\frac{1}{4}'$ N., long. $118^{\circ} 7\frac{1}{4}'$ E.

174.—ENGLAND.—*East Coast.*—*Kentish Knock Light-Vessel.*—With reference to Nautical Notice, No. 186 (October, 1873), information has been received that the position therein assigned to the Kentish Knock light-vessel is erroneous, and that the correct position of that light-vessel is in lat. $51^{\circ} 41'$ N., long. $1^{\circ} 41'$ E.

175.—NORTH SEA.—*Ems River Entrance.*—*Borkum Flat.*—With reference to Nautical Notice, No. 141 (June, 1875), on the intended establishment of a light-vessel on Borkum Flat, information has been received that the light-vessel will be placed in position, and the lights exhibited therefrom, about the latter end of September, 1875. Further particulars will be given when the light-vessel is placed in position.

176.—IRELAND.—*East Coast.*—*Wicklow.*—*Breaches.*—A small bank with 17 feet on it at low water springs has been discovered W. by N. $1\frac{1}{4}$ miles from Breaches—an opening to a tidal inlet, conspicuous by a railway bridge which spans it. Position, lat. $53^{\circ} 5' 40''$ N., long. $6^{\circ} 0' 10''$ W.

Note.—The Breaches bank is in the track of vessels navigating along the shore between Wicklow and Dublin bay.

177.—MEDITERRANEAN.—*Fixed red* lights are now exhibited at the entrances to the basins in Toulon, viz. :—1. On the west pier head of Old harbour, elevated 19 feet above the level of high water. 2. On the north pier head of Merchant port, elevated 13 feet above high water. The lights will be exhibited from iron pillars, and should be seen from a distance of 2 miles.

HYDROGRAPHIC NOTICES PUBLISHED BY THE ADMIRALTY.

- No. 13.—*Fiji Islands.*—Information relating to the south-western part, the Nanuku passage, &c. By Lieutenant Rendell, H.M.S. *Beagle*, 1874.
- No. 14.—*St. Lawrence River.*—*Saguenay River.*—Information relating to the currents, from a report made by Captain O. Trambly to the Government of the Dominion of Canada, 1875.
- No. 15.—*Persian Gulf.*—*Bahrain Harbour.*—Information relating to the approaches to Bahrain harbour. By Commander Morris Chapman, late Indian Navy, 1874.

- No. 16.—*Africa, South and East Coasts*.—Remarks and Sailing Directions for Zanzibar island and the channel, with the adjacent coast from Pangani bay to Rás Kimbiji. By Commander Wharton, H.M. surveying vessel, *Shearwater*.
- No. 17.—*New Zealand*.—Information relating to a shoal recently found in New Plymouth, or Taranaki road. Received through the Customs' Department at Wellington, 1875.
- Nos. 18 and 19.—*England, South and East Coasts*.—Additions and corrections to the Channel Pilot, Part I., between Hastings and Dungeness; and to North Sea Pilot, Part III., at the entrance to the Thames. By Staff Commander John Parsons, H.M. surveying vessel, *Porcupine*.
- No. 20.—*Pacific Ocean*.—*Fiji Islands*.—Information relating to Kandavu island from a recent survey by the officers of H.M.S. *Challenger*, and a report by Navigating Lieutenant H. Hosken, H.M. *Pearl*, and information relative to the supposed position of Onaseuse, or Hunter island, from Commodore J. G. Goodenough, 1875.
- No. 21.—*Indian Ocean*.—*Rodriguez Island*.—Description and Sailing Directions. By Commander Wharton, H.M. surveying vessel *Shearwater*, 1874.

CHARTS, &c., Published by the Hydrographic Office, Admiralty, to the end of June, 1875, and Sold by the Agent, J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.

No.	Scale.		s.	d.
156	m = 1·4	Sweden:—Måseskär to Hällör, including approaches to Kungshamn	1	6
121	m = 1·4	Sweden:—Koster islands, and approaches to Strömstad	1	6
274	d = 2·8	North Polar chart, with Atlantic Ocean to lat. 50°	2	6
300	m = 0·4	Newfoundland, South Coast:—Devil bay to Knife Bay	1	6
H.	Index sheet for the Western portion of Australia, and Eastern Archipelago		0	6
I.	Index sheet for the Eastern portion of Australia, New Zealand, New Guinea, &c.		0	6

OUR OFFICIAL LOG.

NEW ROCKET LIFE-SAVING APPARATUS STATION ON THE COAST OF SWEDEN.—The Board of Trade have received information through Her Britannic Majesty's Consul at Gothenburg that a new Rocket Apparatus Station has been established on Grönskären outside of Kyrksund pilot station north of Marstrand.

BOARD OF TRADE CIRCULARS.

[Copies of these Circulars can be had of Messrs. Pewtress and Co., and of Messrs. Potter, or through any of the Agents of the "Nautical Magazine," or the Agents for Admiralty Charts.]

SHIPS ENTERING SPANISH PORTS IN DISTRESS.—It has come to the knowledge of Her Majesty's Government that cases have occurred where British vessels have been compelled through accident or stress of weather to put into Spanish ports, have, although not trading with any of those ports, been subjected to *heavy fines and confiscation of cargo* on the part of the *Spanish Customs' authorities*, on account of *inaccuracies*, however trifling or accidental, in the ship's *manifest*, the production of which has been demanded by the Customs' House officers immediately upon the vessels reaching port.

As it appears that proceedings of this nature are sanctioned by the letter of the Spanish law, shipmasters are hereby warned of the difficulties to which they may be exposed when putting into Spanish ports under circumstances of the nature above-mentioned, should any inaccuracy whatever be discovered in connection with the ship's cargo or papers contrary to the laws of Spain.—*Board of Trade Notice, M. 12303.*

Translation of Law Referred to in the Foregoing Notice.

The Government of the Republic considering the reasons brought forward by the Minister of Finance, in conformity with the Council of Ministers, and having consulted the Council of State, has thought fit to issue the following Decree :—

Art. 1. Every captain of a vessel laden or in ballast, coming from abroad, whether he brings his cargo intransit, for deposit, trans-shipment, or immediate consumption, shall have with him the general manifest mentioned in Article 46 of the Ordinances visé by the Spanish Consul at the starting point, or by the Local Authorities if there be no Spanish Consul. Captains coming from the Spanish Free Ports and from the colonies shall bring the manifest visé by the "Intervencion del Registro"

or by the despatching Custom Houses respectively. This manifest, as a general one, shall include all the cargo, venture goods (*pacotillas*), and parcels (*encargos*), which the ship may bring, and only one manifest can be visé for each voyage.

Art. 2. A fine of 1,000 pesetas shall be imposed on the captain of a vessel of eighty or more metrical tons, who has not his manifest drawn up when he enters Spanish waters, or a Spanish port, or who, having his manifest, has not got it visé according to the previous article.

Art. 3. The absence of the visé manifest, in cases of vessels under eighty metrical tons, shall be punished by a fine of from five to ten times the duty on the goods carried, if the fault be discovered within the Custom House boundary, and the said absence shall be considered as smuggling or fraud, as the case may be, if the discovery be made in Spanish waters.

Art. 4. The same fault, if the vessel is of more than eighty tons, and carries tobacco, woven goods, or colonial produce (sugar, cocoa, coffee, cinnamon, cloves, pepper, and tea), shall be punished by a fine of from five to ten times the duty on those goods, if the discovery be made within the boundary of a Custom House; and by the penalties established for the crimes of smuggling and fraud, as the case may be, if the capture takes place in Spanish waters. These penalties do not debar that mentioned in Art. 2. Those who come in on account of "force majeure," duly proved and appreciated by the Customs' authorities, are not liable to the penalties established in Arts. 2, 3, and 4, the captains being obliged to draw up and present the general manifest within the time that may be given to them.

Art. 5. When packages or cargoes of tobacco, woven goods, and colonial produce (sugar, cocoa, coffee, cinnamon, cloves, pepper, and tea), are declared in the manifest as consisting of other goods, in agreement with the statements in the bills of lading, a fine of from five to ten times the duty will be inflicted. For this penalty the consignees of the goods are responsible, and the captains or masters shall only be answerable when, in drawing up their manifest, they depart from what the shippers have stated in the bills of lading.

Art. 6. The gross weight declared in the manifest shall serve as a basis for the operations, and the plus or minus differences, if they exceed 10 per cent., shall be punished as if they occurred in the nett weight, according to cases 2 and 3 of Art. 209 of the Ordinances. The consignees of goods shall pay if the bills of lading and manifest agree, and the captain if he has departed from the statements in the bills of lading.

Art. 7. Woven goods and clothes shall preserve the Custom House stamp known as "Sello de Marchamo" for circulating throughout and remaining in the whole nation. Colonial produce (sugar, cocoa, coffee, cinnamon, cloves, pepper, and tea) must be accompanied by a cocket

issued by an authorised administration for their circulation throughout the Fiscal Zone.

When woven goods and the other merchandize mentioned in this Article are seized and found wanting in any of the requirements set forth, or with the stamps tampered with, or out of date, or with emendations in the cockets, a fine shall be inflicted of from five to ten times the duty; or the penalties for fraud shall be imposed according as the discovery be made within or outside of a Custom House boundary.

Art. 8. According to the provisions of the penal law, besides the employés and armed forces and institutions whose special duty it is to prevent contraband and fraud, and to give every kind of assistance for the apprehension of the offenders, authorization to take measures to guard against the commission of those crimes is given to the authorities and volunteers of the Republic, who shall for such services receive the rewards mentioned in Appendix 4 to the Ordinances—viz., the value of the goods seized, or amount of the fines imposed, when both goods and offenders are captured, and the same, after deducting the tariff dues, when the goods alone are captured.

Art. 9. The first part of Art. 292 of the Ordinances shall receive the following addition :—

The captains of vessels coming from the said countries (the Spanish colonies) shall come provided with the manifest mentioned in Art. 46. visé by the Custom House at the starting point.

Art. 10. Spanish Consuls, Vice-Consuls, and Consular Agents abroad, the administrators of Colonial Custom Houses, and the " Interventores de los Registros " at the free ports, will not place their visa on the manifests presented to them if they are not drawn up in conformity with Art. 46 of the Ordinances, and they shall make a note, authorized by their signature and stamp, of any remarks, mistakes, or emendations in the said manifests, and they shall render useless the lines that remain without having been written on, so as to prevent abuses. They shall keep a register, in which they shall enter with co-relative numeration the manifests on which they place their visa, stating the name, class, nationality, and tonnage of the vessel, the name of the captain or master, the place of destination, and the generic class of goods forming the cargo; and they shall necessarily send advice to the Direction-General of Customs, by the post of the same day on which they hand over the manifest to the captain, on which manifest they shall place the number corresponding thereto, according to the said register. These functionaries shall receive such fees as may be fixed by the Ministry of State.

Art. 11. Cases 1 and 2 of Art. 207 of the Ordinances are abolished, and all those which are opposed to these enactments are suppressed or modified.

Art. 12. The Direction-General of Customs is authorized to reduce or entirely remit the fine of 1,000 pesetas mentioned in Art. 2 of this Decree, and those mentioned in cases 3, 4, and 12 of Art. 207 of the Ordinances.

Art. 13. Before putting these orders in force the following spaces of time are allowed to be counted from the day of publication in the *Madrid Gazette*; one month for vessels from Europe, Asia, and Africa, in the Mediterranean, Africa, in the Atlantic as far as Cape Mogador, and the Canaries; three months for vessels from Cuba, Porto Rico, and the other American ports in the Atlantic, from Greenland to the Gulf of Mexico, inclusive; four months for vessels from all other parts of the globe.

This Decree shall be applied after one month as regards circulation in the Fiscal Zone and in the Interior.

Madrid, 30th May, 1878.

The President of the Government of the Republic—

(Signed)

ESTANISLAO FIGUERAS.

The Minister of Finance—

JUAN TUTAN.

The Government of the Republic has thought fit to issue the following Decree :—

(Translation.)

Decree.

1. The Orders mentioned in Articles from 1 to 6, and in the others relating thereto, of the Decree of 30th May, are not binding until 30th August next, as to captains coming from ports in the Ionian Sea, the Adriatic, the Archipelago, the Sea of Marmora, the Black Sea, the Sea of Azof, the North Sea, the Irish Sea, the Baltic, and the White Sea.

2. They will also not be binding, until 30th October next, upon vessels from Cuba, Porto Rico, and the other American ports between Greenland and the Gulf of Mexico inclusive.

3. These extended terms and the others mentioned in Art. 13 of the Decree of 30th May, shall be understood to have reference to the date of arrival in the ports of Spain, and not to the date of sailing from foreign ports.

Madrid, 18th June, 1878.

(Signed)

F. PI Y MARGALL.

The Minister of Finance—

F. M. LADICO.

LIFE SAVING APPARATUS.—LIFE REWARDS.—With a view to the encouragement of effort to save life by the life-saving apparatus, and to promote the efficiency of the service, the Board of Trade have decided to

award a sum not exceeding one pound (£1) for each life saved from shipwreck by means of the apparatus. This sum will be paid in addition to the usual remuneration, and to special payments for personal services. It is to be divided among the Coastguard and enrolled volunteers in such proportions as the officer in charge of the apparatus may think desirable.—T. H. Farrer, secretary ; Thomas Gray, assistant-secretary.—*Circular* No. 10, March, 1875.

INSTRUCTIONS TO CONSULS.—DEATHS ON BOARD SHIPS.—The Consul's attention is drawn to cases of deaths on board ship. Paragraph 89 of his instructions states his general power of inquiry into infringements of the Merchant Shipping Acts, and paragraph 109 (a) provides for naval courts being held into complaints made by the master or any of the crew of a British foreign-going ship which require immediate investigation. The Consul should be careful not only to apply the provisions of these paragraphs to any suspicious cases of death on board ship, and to report all such cases, but in every case of death, with or without suspicion, to state, by an indorsement on the list of the crew, the circumstances under which the death took place.—T. H. Farrer, secretary ; Thomas Gray, assistant-secretary.—*Circular* No. 17, May, 1875.

INSTRUCTIONS TO SUPERINTENDENTS OF MERCANTILE MARINE OFFICES.—DEATHS ON BOARD SHIPS.—The attention of the superintendent is drawn to s. 269 of the Merchant Shipping Act, 1854, and to par. 286 of the instructions to shipping masters, which provides for inquiry to be made into the cause of any death on board a foreign-going ship. The superintendent will be careful not only to carry into effect the provisions of this paragraph, and report suspicious cases of death, but in every case of death, with or without suspicion, to state, by an indorsement on the list of the crew, the circumstances under which the death took place.—T. H. Farrer, secretary ; Thomas Gray, assistant-secretary.—*Circular* No. 16, May, 1875.

INSTRUCTIONS TO SURVEYORS.—TRANSFER OF VESSELS TO A FOREIGN FLAG.—The following is a translation of a ministerial decree of the Belgian Government on the subject of the transfer of vessels to the Belgian flag :—" Art. 1. In future no provisional ' lettre de mer ' will be granted under Art. 8 of the law of 20th January, 1873, to foreign vessels except upon the production of a certificate of seaworthiness. Art. 2. In the case of British vessels in British ports about to be transferred to the Belgian flag these certificates of seaworthiness must emanate from the surveyors to the Board of Trade. Art. 3. In all other cases certificates of seaworthiness must be signed by two surveyors appointed by the Consul at the port where the vessel is lying, or by the nearest Consul ; they must further be ' visés ' by the Consul, who will declare in his visa

that the surveyors were duly appointed by him.—Brussels, 27th January, 1875.”—T. H. Farrer, secretary ; Thomas Gray, assistant-secretary.—*Circular No. 14, May, 1875.*

INSTRUCTIONS TO MEASURING SURVEYORS.—INTERNATIONAL TONNAGE.—The Board of Trade forward herewith, for the information and guidance of officers concerned in the duties of measurement and registry of ships, a copy of a recently issued Order in Council which extends to vessels of the kingdom of Spain the advantages held out by the 60th Section of “The Merchant Shipping Act, 1862.” In consequence of the amount of deduction for propelling power being different in the two countries in respect of some steamers, option is granted by the enclosed Order to the masters of steamships of the kingdom of Spain whereby the said masters may elect to have the engine-room measured under the rules relating to British ships. When the engine-room is measured according to the British rules, in such cases a “Certificate of British Tonnage” is to be granted, adopting thereon the gross tonnage as stated in the Spanish certificate of registry, and deducting from the gross tonnage the allowance for engine-room under the British rules, and also the allowance on account of spaces occupied by seamen or apprentices and appropriated to their use. A copy of the document furnished to the Spanish master is to be sent to the Principal Surveyor for Tonnage, with a note thereon of the measurement of engine-room, and the amount of deduction under the Spanish rules. The fees for admeasurement under the accompanying Order in Council are to be the same as for the admeasurement of British ships for the time being, but only for the spaces actually measured.—T. H. Farrer, secretary ; Thomas Gray, assistant-secretary.—*Circular No. 13, May, 1875.*

TONNAGE MEASUREMENT OF SPANISH VESSELS.—At the Court at Windsor, 17th day of March, 1875.—Present: The Queen’s most Excellent Majesty in Council.—Whereas by the “Merchant Shipping Act Amendment Act, 1862,” it is enacted that whenever it is made to appear to Her Majesty that the rules concerning the measurement of tonnage of merchant ships for time being in force under the principal Act have been adopted by the Government of any foreign country, and are in force in that country, it shall be lawful for Her Majesty, by Order in Council, to direct that the ships of such foreign country shall be deemed to be of the tonnage denoted in their certificate of registry or other national papers, and thereupon it shall no longer be necessary for such ships to be re-measured in any port or place in Her Majesty’s dominions ; but such ships shall be deemed to be of the tonnage denoted in their certificates of registry or other papers in the same manner, to the same extent, and for the same purposes, in, to, and for which the tonnage denoted in the certificate of registry of British ships is to be deemed the tonnage of such ships :

And whereas it has been made to appear to Her Majesty that the rules concerning the measurement of tonnage of merchant ships now in force under "The Merchant Shipping Act, 1854," have been adopted by the Government of His Majesty the King of Spain, with the exception of a difference in the mode in certain steamers of estimating the allowance for engine-room, and such rules are now in force in that country, having come into operation on the 2nd day of December, 1874, Her Majesty is hereby pleased, by and with the advice of her Privy Council, to direct as follows :—

1. As regards sailing ships, that merchant sailing ships of the said kingdom of Spain, the measurement whereof after the said 2nd day of December, 1874, has been ascertained and denoted in the registers and other national papers of such sailing ships, testified by the date thereof, shall be deemed to be of the tonnage denoted in such registers and other national papers in the same manner, and to the same extent, and for the same purpose, in, to, and for which the tonnage denoted in the certificate of registry of British sailing ships is deemed to be the tonnage of such ships.

2. As regards steamships, that merchant ships belonging to the said kingdom of Spain which are propelled by steam or any other power requiring engine-room, the measurement whereof shall after the said 2nd day of December, 1874, have been ascertained and denoted in the registers and other national papers of such steamships, testified by the dates thereof, shall be deemed to be of the tonnage denoted in such register or other national papers in the same manner, and to the same extent, and for the same purpose, in, to, and for which the tonnage denoted in the certificate of registry of British ships is deemed to be the tonnage of such ships : Provided nevertheless, that if the owner or master of any such Spanish steamship desires the deduction for engine-room in his ships to be estimated under the rules for engine-room measurement and deduction applicable to British ships instead of under the Spanish rule, the engine-room shall be measured and the deduction calculated according to the British rules.

INSTRUCTIONS TO MEASURING SURVEYORS.—INTERNATIONAL TONNAGE.—The Board of Trade forward herewith, for the information and guidance of officers concerned in the duties of measurement and registry of ships, a copy of a recently issued Order in Council, which extends to vessels of Sweden the advantages held out by the 60th Section of "The Merchant Shipping Act, 1862."—T. H. Farrer, secretary ; Thomas Gray, assistant-secretary.—*Circular No 11, March, 1875.*

TONNAGE MEASUREMENT OF SWEDISH VESSELS.—At the Court at Windsor, the 17th day of March, 1875.—Present: The Queen's Most Excellent Majesty in Council.—Whereas, by "The Merchant

Shipping Act Amendment Act, 1862," it is enacted, that whenever it is made to appear to Her Majesty that the rules concerning the measurement of tonnage of merchant ships for the time being in force under the principal Act have been adopted by the Government of any foreign country, and are in force in that country, it shall be lawful for Her Majesty, by Order in Council, to direct that the ships of such foreign country shall be deemed to be of the tonnage denoted in their certificates of registry or other national papers, and thereupon it shall no longer be necessary for such ships to be remeasured in any port or place in Her Majesty's dominions, but such ships shall be deemed to be of the tonnage denoted in their certificates of registry, or other papers, in the same manner, to the same extent, and for the same purposes in, to, and for which the tonnage denoted in the certificates of registry of British ships is to be deemed the tonnage of such ships :

And whereas it has been made to appear to Her Majesty that the rules concerning the measurement of tonnage of merchant ships now in force under "The Merchant Shipping Act, 1854," have been adopted in Sweden by the Government of His Majesty the King of Sweden and Norway, and are to come into force in Sweden on the 1st day of April, 1875 :

Her Majesty is hereby pleased, by and with the advice of Her Privy Council, to direct that the ships of Sweden, the certificates of Swedish nationality and registry, or the certificates of measurement of which are dated on or after the first day of April, one thousand eight hundred and seventy-five, shall be deemed to be of the tonnage denoted in the said certificates of Swedish nationality and registry, or certificates of measurement.

NETHERLANDS.—ABOLITION OF LIGHT DUES, AND ADMEASUREMENTS OF TONNAGE.—The Board of Trade have received through the Secretary of State for Foreign Affairs a copy of a despatch from Her Majesty's Minister at the Hague, enclosing the following translation of a measure recently passed by the Dutch Chambers, relative to the abolition of light, beacon, and tonnage dues, and to the measurement of ships :—

Art. 1. Light, beacon, and tonnage dues which are raised in accordance with the law of August 18, 1849, are abolished.

No charge is made for the placing of buoys, lights, or beacons in navigable waters, as referred to in that law, except in the following cases :—

- a. Light dues charged at particular places for the lighting of harbour lights, not in the interest of the general navigation of the channel, but for the purpose of facilitating the approach to those places :—

b. Beacon dues for the placing of beacons in creeks and small channels leading to particular places, and exclusively for the purpose of facilitating the approach to those places.

Art. 2. The proprietors, shipowners, or masters of sea-ships, who are bound by the law of May 28, 1869, to be provided with an ordinary Netherland certificate, are required to have their ships measured by officials appointed for that purpose, at the place where the ship is stationed, whenever it is thought necessary.

Art. 8. The unit of the ship's measurement is the cubic mètre.

The certificate of measurement to be handed over to the master shall state the capacity of the ship, both in that unit and in register tons of 2·83 cubic mètres. A general measure of internal administration shall further regulate the measurement of the ships in accordance with the Moorsom system, and fixes the time at which the provisions of this Article shall come into operation.

Art. 4. To commence at the time appointed, according to the latter part of the previous Article, the consular fees, for the calculation of which the ton at $1\frac{1}{2}$ of the cube of the mètre has hitherto served as basis, shall be raised according to the scale of one cubic mètre. The tariff of those fees shall be modified by a general measure of internal administration in such a manner that they shall not be increased by the change of the unit and mode of measurement.

Art. 5. Foreign vessels shall be measured in the same manner as Netherland ships, on their first arrival in Holland. If those vessels are provided with a foreign certificate of measurement, given to them by a competent authority, their capacity can be calculated according to Dutch measurement. The declaration respecting this calculation is to take the place of the certificate of measurement, according to Articles 7 and 8 of the Law of July 14, 1855. The calculation is further to be determined by a general measure of internal administration.

Art. 6. Vessels belonging to countries in which the same system of measurement exists as in the Netherlands, may be exempted from measurement in this country, on condition of reciprocity and the further necessary provisions.

Art. 7. Articles 2, 8, and 4 of the above-mentioned Law of July 14, 1855, are revoked. The last sentence of Article 2 shall however remain in force up to the time to be determined according to the latter part of Article 2 of this Law.

Art. 8. This Law shall come into operation on July 1, 1875.

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THE ADVANCE-NOTE SYSTEM.

THE advance-note system is the chief bar to the improvement of our merchant seamen. It is a serious impediment to freedom of contract, and is one of the most prolific sources of danger to property, and of loss of life at sea.

The advance note is a convenience and semi-guarantee to the shipowner; it is a source of profit to the crimp, brothel keeper, and publican; it is a link that is said to make the connection between the shipowner and the crimp mutually advantageous; and it is in every way bad for seamen, passengers, owners of goods, and insurers.

The Royal Commissioners on unseaworthy ships, with the Duke of Somerset at their head stated in their report that they "feel convinced that unless this mischievous mode of payment be discontinued seamen will never be raised from their servile dependence on crimps, and taught to rely on their own industry and intelligence." This very strong sentence referred to the advance note system. In other paragraphs the Royal Commissioners recommended that the payment of cash advances to seamen should also be abolished.

The report of the Royal Commissioners on unseaworthy ships, which is throughout clear, and statesmanlike, is certainly devoid of all partiality to the seaman, and particularly fair to shipowners, deserves and has won the confidence of the nation. So strong a recommendation by the Royal Commissioners could not be overlooked by any government; and as the President of the Board of Trade, the Chancellor of the Exchequer, and the Premier stated, they had introduced a clause (9) in

the Merchant Shipping Bill to place it before the House in a practical shape.

No one (but the crimp and brothel keeper) has been found who does not assert that the "advance-note system" is an evil. The only question that has entered into the discussion of the subject has reference to the magnitude or otherwise of the evil, its necessity or otherwise, and the possibility or impossibility of educating seamen, so that they may see that it is not to their advantage to bring the "system" into play. The debate in the House of Commons on the 9th clause of Sir Charles Adderley's Bill will we fear be read by the seaman. If it is, it will lead him to question whether as a labourer he now has the right of freedom of contract. The debate was instructive in many particulars.

Sir Stafford Northcote, Sir Charles Adderley, Mr. Stephen Cave, The Solicitor General, Mr. Thomas Brassey, Mr. Arthur Peel, Mr. Evelyn Ashley, Mr. Lefevre, Mr. Knatchbull-Hugessen, Mr. Eustace Smith, Mr. J. C. Stevenson, all strongly advocated the abolition of the advance note system, but the Prime Minister jettisoned Sir Charles Adderley's clause nevertheless. This jettisoning was not however resorted to by the "captain" of the ministers, until the clause had become unseaworthy and overloaded by patches and amendments, nor until the whole subject of advances, and the advance-note system especially, had become surrounded by such a thick mist as to render it unintelligible.

In the case of ships belonging to, and sailing from, Austro-Hungary, Sweden, Norway, Denmark, Russian-Finland, advances of wages, if there be any advances, are made in *cash*, according to agreement, and the advance note is absolutely unknown. In German ships, leaving German ports, the advance is often for two months' wages, and the payment is always in cash, unless, indeed, the ship after leaving Germany is about to trade at an English port, when one month is paid down in cash, and the second by advance note. The second month's advance is by note, which, in order to protect the owners against the effects of the English system on the German seaman, is not paid in Germany until the ship leaves England.

The proposal to do away with the "advance-note system" was, after all, merely a proposal to put the British seaman on an equality with seamen serving in ships in most foreign countries, and if the British sailor is only held to the British flag by the British advance-note system, as shipowners soberly believe to be the case, what is there to attach him to the foreign flag under which no such system exists. Assertions made with the greatest gravity are not always correct.

The defeat of the Government clause, or rather the defeat of the proposal of the Royal Commissioners on unseaworthy ships, was not the result of a party fight. We learn from our compiler of parliamentary intelligence that Mr. Bates the honourable member for Plymouth claims

for himself alone the honour of having stopped the 9th clause. Whether the honour claimed is conceded we do not know; but it is quite clear that the member for Plymouth did lead the opposition to the clause, and did propose and support and nearly carry the amendment which wrecked it after having made it, as Mr. Norwood is reported to have sarcastically but truthfully observed, "neither fish, fowl, nor good red herring," and as the Premier stated, such as could not obtain the confidence of "either side of the House." At any rate, "the largest owner of sailing ships in this or any other country" fought bravely and well for what, according to existing circumstances, he evidently firmly believed to be best for himself, for his seamen, for his constituents, and for all other parties concerned.

The above remarks are however merely by way of preface.

In order to record the result of the debate clearly in our pages, we must explain chiefly for the information of our non-technical readers (who are very many) the exact state of the case. We must therefore begin by explaining what the "advance" note and the "allotment" note are, and how they differ from each other; what the Royal Commissioners recommended as regards "advances" and advance "notes;" and what the Bill as introduced adopted; how far the report of the Royal Commissioners appears to have gone beyond the mark in their recommendation, and therefore how far the bill as introduced also went beyond it; and further how very far short of the mark the clause (9) was after it had been amended by the honourable member for Plymouth, and when thrown over by the Premier with the telling remark that "in its then attenuated and diminished form it did not appear to possess the confidence of either side of the House."

The "advance note" is a written undertaking given to a seaman by the master or owner of a ship, to the effect, that *in case the seaman duly sails in the ship, and is serving on board of her for a specified number of days* after her departure, the owners will pay a sum specified in the note, after the date specified thereon, to any person who may have advanced that sum to the seaman on the credit of the note. An advance note is thus a circuitous device for giving an advance of wages to the seaman *before* any wages are earned, and yet guarding the shipowner against the risk which he would run by the seaman breaking his contract. In short, instead of leaving the contract free as between master and servant,—and, if it is mutually agreed between the parties that an advance shall be made, leaving the master to advance cash, and then leaving either (master or seaman) to proceed against the other by ordinary course of law, for any subsequent breach of contract: instead of doing this, the "advance-note system" is a circuitous system in the favour of the master and against the seaman.

Formerly advance notes were required to be in such form and terms

as the Board of Trade might approve ; but this regulation was abolished in 1854 and the note can be in any terms agreed on between the parties. The Bill, (clause 9), as introduced aimed at stopping advances of wages altogether, and it would therefore have rendered the use of the advance note no longer possible.

The "allotment note" is a document of another sort altogether, and has reference solely to payment of portions of seamen's wages *after* they are earned. The statutory provisions concerning allotment notes are contained in Sections 168 and 169 of the Merchant Shipping Act of 1854. These allotment notes—we must beg the reader now to keep in his mind the word *allotment* as distinguished from *advance*—the allotment notes must be in forms sanctioned by the Board of Trade, and can only be *sued on* by the wife, or father, or mother, or the grandfather, or grandmother, or any child, or grandchild, or any brother, or sister of the seaman. No wonder the crimp* and brothel-keeper* do not like the allotment note, and do all they can in favour of continuing the advance-note system. The *allotment* note is a source of unlimited domestic happiness. It enables the seaman's family to receive a portion, generally half, of his wages earned while he is away. It keeps the home together, if there is a home, and it keeps a sick relative, a grandfather, or sick sister, or other relative, as the case may be, out of the poor-house, or the child out of the gutter, and the wife decent. No wonder the crimp and brothel-keeper object to it. Moreover, the allotment note does this : it saves the seaman's wages. For when he comes home from a long voyage with twelve or fourteen months' wages to be settled, he finds that his family have already had half and have lived on it, and that what with payments on account abroad, and slops, there is not quite half the sum he has earned for the crimp and brothel-keeper to plunder him of. No wonder the crimp and brothel-keeper do not like the allotment note. Some of our non-technical readers may be shocked when we assume that a married sailor has anything to do with crimps and brothel-keepers ; but being shocked will not alter the

* By these and subsequent remarks we do not mean to convey to our readers an idea that all sailors' lodging-houses are improper houses, or that all sailors, boarding masters, and mistresses are improper persons, or that sailors cannot, to a limited extent, get decent accommodation and fair treatment ashore. There are many admirable old salts and old saltesses who keep boarding-houses, and who are real fathers and mothers to "Jack" ashore. But these respectable persons stand no chance against the improper houses and the crimps connected with such houses, the "Rocket porters" (gin bottle conveyers) who go on board, and "hammock snatchers," and women who hang about docks and shipping offices, and thus secure "Jack" before he can get to the respectable place. The sailors' homes are also admirable institutions, and do an immensity of good, but are sometimes a little too barrack-like. But no one dares to assert that the continuance of the advance-"note" system is necessary to keep up the respectable lodging-house or the sailors' home.

case, and it is better that the reader should know the truth and be shocked than that he should not be shocked but be ignorant. About one sailor out of ten discharged in many ports with a large sum of money gets away to his family, or to sea again, without being plundered, sometimes not only of his money but of his clothes too, and many, besides being plundered contract the contagious disease into the bargain.

The allotment note, which secures a part of the wages of the seaman for the use of his family, is an unmitigated good. On carefully reading the Bill, we find that it did not, as has been publicly misrepresented, propose to take away from the seaman the power of providing for his family in his absence. The *allotment* note was to have remained; but the *advance* note, and (here is the stumbling-block) with it all *cash* advances before wages are earned were to have been abolished.

The "advance-note system" is ostensibly kept up for two purposes—

- (a) To enable the seamen to procure an outfit.
- (b) To enable him to leave some money for his wife.

It is really also kept up—

- (c) To ensure his attendance on board.
- (d) To enlist for this purpose the services of the crimp.

The advance-note system rarely provides for an advance of two months, but usually for one month's wages. It is admitted on all hands to be a great evil and to be a great source of demoralization to seamen, and a great and direct source of loss of life and property at sea.

The advance-note system is not necessary in ninety-nine cases out of one hundred, and so far from enabling the seamen to procure an outfit or to leave money for his family, it enables him to debauch, and the crimp to fatten on prospective wages. A seaman, not unfrequently, in fact generally comes home from a long voyage with a considerable sum due to him. We know of innumerable cases where he has spent the whole £50 to £100 in two nights, and he does this, knowing that he can get an advance note afterwards. The crimp keeps him till his wages are spent and his advance note mortgaged, and then gets him a ship and takes the advance, and it so happens that seamen are put on board ship in a state of intense intoxication, and without clothing beyond what they stand upright in. We need not enlarge on the evils of the "advance-note system," or on the helpless state of intoxication in which seamen are put on board ship and the great loss of life and property that happens in consequence, for the facts are admitted on all hands.

But the advance-note system is a lever in the hands of the shipowner, it does this for the shipowner, while it helps the crimp and demoralizes the seaman, it enlists the service of the crimp in seeing that the man does get or rather is taken, thrown, or left on board (drunk) when the ship is about to sail. Mr. Lamport used to keep his ships in the river for twenty-four hours

to let the men get sober before going out of the Mersey; but he found after a time that the crimps and men knew this, and came, or were brought, on board at the expiration of the extra twenty-four hours as drunk as ever. The advance note is given by the owner, and is payable only on the conditions named—that is to say, that the seaman goes on board and serves for (three) days. The crimp or some of his fraternity often cash, or more generally give bad clothes or bad spirits, or some of the men's own clothes, for the advance note, and as they would not get payment unless the seaman is got on board somehow, they have to exert themselves to get him on board, and if they are doubtful about him and fear that he will run away if he be allowed to remain sober, they keep him drunk (at his own expense) until they are ready to cast him on board. In this they render service to the shipowner in getting the man on board at all. We are sorry to say that many respectable shipowners regularly employ crimps, and they save the shipowner the cost of a shipping agent to do the work at each port. For service and trouble, the crimp has generally assisted in spending the wages the seaman had earned in his previous ship, and cashes his note at a good discount or gets him slops (sometimes the seaman's own that he had previously brought ashore), for which the crimp charges double value, or he provides spirits with which to keep the seaman drunk. When all this happens abroad it is much worse than at home, because the advance of wages abroad is sometimes for two or three months, and there is in some foreign ports a payment of "blood money" to the crimp besides.

The advance-note system also enables crimps to manufacture seamen—that is, to palm off on shipmasters, what Mr. Bright would call the "residuum," loafers, jail birds, and long shore scoundrels of all sorts. The crimp, and not the manufactured residuum, gets the note.

The debate on the clause of the Bill that proposed to get rid of the advance-note system is instructive and very curious.

One honourable and learned member said the clause would be "a gross interference with the freedom of contract between the employer and the employed," and another honourable member said, "if the master wished to make the advance, and the man wanted it, what right was there to interfere," (quite so, but why should he bring the advance-note system into play). Another believed "that if advance notes were abolished, the foreigners would have the pick of our seamen." (Does this mean that the advance-note system is the tie that keeps British seamen to the British flag? and, considering that we are almost the only country in which the advance note is known, it is not easy to see what flag Jack would prefer to ours.) Another advocated "the continuance of the advance system until the House had heard stronger reasons against it." Another, that "it would be utterly impossible to

do away with the advance-note system, it would be unjust to British shipowners " * * * "and that the Peninsular and Oriental Company and Lloyd's underwriters were opposed to the abolition of the advance-note system." (Observe, not the note only, but the system, of which the note is a part. That Lloyd's underwriters should wish to keep up a "system" that supports crimps and harlots and ensures a man commencing his voyage in a state of drunkenness, to the danger of the ship, is one of the very many odd contradictions in this curious debate.) Another urged that "it was impossible to do without advance notes" (not advances but advance *notes*). Another entered his protest "because they had no right to interfere between man and man." One member said "the notes are not legal now," and was answered by the Attorney-General who said "they are perfectly legal." The balance of opinion was, however, greatly in favour of the Government clause.

There is not much to be said for the allegations brought forward in favour of the continuance of the "system," of which the advance note is the keystone—of argument, none is reported. The only allegation worth notice in favour of the system is the oft-repeated one, that its abolition would "do away with freedom of contract between the shipowner and seaman." As this was gravely stated, it is worth while to look into it. To do this we must begin with the question, what is freedom of contract in such a matter?

Does not the oft-repeated use of the words "advance-note system" at once show that there is a "system;" and does not any "system" involve "limits," and do not "limits" involve the reverse of "freedom."

It would be freedom of contract if the seaman could stipulate that his wages shall be paid to him as they become due, month by month; but he cannot do that. He must, by law, wait for his money until after the end of the voyage, or until after he is discharged. He is, after the voyage is over, kept waiting days for his money. He is compelled, by law, to lose his time for the interest of the shipowner; to wait idle at his own cost.

It would be freedom of contract if the seaman could not be arrested without warrant for breach of it, and if the master were put on the same footing as the seaman if he wished to enforce it. If the master wishes to enforce it now, he proceeds by arrest of the seaman as of a felon. If the seaman wishes to enforce, he must proceed civilly. It would be, if not freedom of contract, at least equality, if the staff at the Board of Trade offices were employed equally as between owner and seaman, and not wholly in the interests of the owner, and in the arrest of the seaman without warrant for breach of a civil contract. It would be equality, as the seaman pays his fee as well as the owner his, if the Board of Trade "runners" would leave the seaman alone, even as they leave the master

and owner alone, or, failing that, if they were employed in making owners pay allotment notes and advance notes of men who do not desert, even as they are employed for the owner in arresting, without warrant, seamen to whom those notes are given who do desert. It would be freedom of contract for the seaman to be able to say, "I want a month's, or two months', or three months' wages *in cash* down, before I go on board ship." It would be freedom for the owner to accept those terms and engage the man, or to reject those terms and not engage him. That would be freedom of contract. An option by the seaman to demand payment from the owner in cash, for the advance of wages agreed upon. That is not the present "advance-note system," therefore the present system is not freedom of contract, and therefore to break it down would not be to "interfere with freedom of contract." It is only throwing dust in the eyes of the public to assert that to break it down would be to interfere with freedom of contract. We are not referring to present law, but present "system." The present "system" is this: the seaman stipulates for, and the owner promises to give an advance of wages, of a certain amount; if the seaman *means* anything by an advance on account of wages, he means value for the amount appearing in the articles of agreement as cash; the sum that is deducted from the seaman's wages, as if it were cash paid to him; but under the "advance-note system" the seaman does not get the cash named and stated to have been advanced to him, or anything like it. *He* gets by the "system" something instead of the cash—viz., a piece of paper, an advance note, which, in the majority of cases, is of very much reduced value to him. How a "system" that gives the seaman no freedom to contract for a cash advance, but compels him to take a reduced sum by way of a note instead of *cash*, and then to have the full amount as cash deducted from his wages; how this "system" can be stood up for on the ground that it is freedom of contract, is to us unintelligible. It shows however what "freedom of contract" is, according to the views of parties interested, of the Peninsular and Oriental Company, and Lloyd's underwriters for instance.

The seaman may now, we fear, take the hint as to what has been said regarding freedom of contract, and stand out for what he may think real freedom.

In Spain, the seaman gets a cash advance or a note advance, as agreed by the parties. That is freedom of contract. In Belgium, cash is advanced when an advance is stipulated for. The note is unknown. That is freedom of contract. That would not entirely suit the British shipowner or the crimp, for by a real freedom "system," as against the "advance-note system," which is not freedom, the shipowner himself, and not the crimp or clothes-seller, or brothel-keeper, would

lose the value of the advance if the seaman deserted, and the crimp would lose his hold over the seaman. The owner should be left to his legal civil remedy also, if the seaman once got his advance in cash, and not by way of a note. The crimp would have to take his legal remedy before his extortions would be met by the seaman; and legal remedy is exactly what a crimp could never take, and which, the present system being all in the crimp's favour, it is not necessary that he should take now. Freedom of contract, by all means, may, perhaps, be a good thing, but do not let us call a "system," which gives a sailor a note (and not cash, and then deducts cash in payment for wages), a system that is in favour of the crimp against the seaman, and in favour of everybody against the seaman, do not let us call that "freedom" of anything but extortion. Had the Bill of Sir Charles Adderley proposed to abolish the advance "note," and to declare in the name of "freedom of contract" that the seaman should be fairly treated, and that there should be paid to himself in cash the advance he stipulates for as in Italy,* it might have met with a different fate, though with no less opposition.

An amendment was accepted to the Government clause, which, if we are able to understand aright, would have made the continuance of the "advance-note system" legal in this country for a month's wages only, whilst abroad any amount of advance might have been claimed as a right by the seaman to be paid in cash. The limit to a month's advance in this country was it appears recommended on the distinct allegation that it is now the *custom* in the case "of long voyages to make advances amounting to two months' wages." We cannot but think that there is some mistake here, and that the observation of the "largest sailing ship-owner" cannot have been correctly reported.

There are it is quite true *exceptional* cases in which shipowners are sometimes obliged to grant advance notes for two months' wages on the commencement of a voyage from this country, but they are the exception and not the rule. This we state positively, and defy contradiction, and being fully aware of what the *custom* now is, we are convinced that the *report* of the observation we have quoted above is incorrect. The member himself could not have made such a mistake.

The clause as amended would have been an odd example of freedom of contract. It would have rendered impossible any cash advance at all in the United Kingdom. It would have perpetuated and strengthened the advance-note system here as against the sailor. It would have limited the advance to one month at home, and abroad it would have

* In Italy a month's advance is given when stipulated for, but it is in cash. If the seaman is trustworthy, the payment is made when the agreement is signed. If the seaman is not known, the payment is made when he goes on board with his clothes.

prevented the owner from using the note, but would have compelled him to advance, not one, but two, three, even six months' wages in cash, and this abroad !

The honourable member for Hull, acting on the assumption (which is true) that *one* month's advance is now the *custom*, proposed to limit the advance to two weeks' wages, and that proposal was received by many with favour. It is the Belgian system very nearly.

Mr. Henley was, however, glad that the Government had accepted the amendment proposed by the honourable member for Plymouth, because he said, the clause with that amendment "treated both parties (the ship-owner and the seaman) as fools, and left them to do as they pleased within its limits." The Prime Minister, in speaking of the clause as it stood with the accepted amendment, said with the fullest approbation of each side of the House, that "freedom of contract was a necessary condition in a commercial and manufacturing nation." The Premier did not commit himself by calling the present system freedom of contract ; when he spoke of freedom of contract, he was hinting at some reform that he thought necessary. It may be, as the Premier doubtless wishes, that his words will be taken up by the sailors and rigidly acted on in that sense. They will then in the spirit of those words demand freedom to receive their advance in cash if they please, and for as many months as they please, and upset the present advance-note "system," which is not "freedom of contract," and is not "necessary" in this commercial and manufacturing nation. They will also apply for the use of the Board of Trade staff to enforce against the owners payments of allotment notes and advance notes when granted, and to recover for the seaman penalties for breach of contract as to food, crew space, overloading, and wages, in the same way that the owner uses the officials to arrest the seaman without warrant.

The recommendation of the Royal Commissioners, and the Bill founded on that recommendation, are now believed to have gone too far in endeavouring to prevent cash advances as well as advance notes. Seamen may go the proper distance, and if they think right demand cash and nothing but cash, and thus, in the words of the Royal Commissioners, learn to rely "on their own industry and intelligence," and to enforce "freedom of contract."

But let us look a little further. When, in order to avoid a temporary inconvenience that would accompany the abolition of a "system" that is admitted on all sides to be ruining the sailor, the shipowner pleads on behalf of the sailor for freedom of contract, is he not, to say the least of it, a little short sighted ? The nature of a seaman's employment is such that it has been hedged and guarded by various "systems" that are the reverse of that freedom. If the sea service were not thus hedged in,

the shipowner could not get his ship to sea, and if a sailor were paid his wages by the week or by the month as he earns them, in the same way as any other labourer, no ship master would be able to keep a crew on board ten minutes after a ship touched at any port. Freedom of contract, freedom from arrest without warrant, and the continuance of the "advance-note system" whereby the crimp profits on each desertion during a voyage and on each shipment of an original member of a crew or of a substitute, all this is exactly the thing that is not wanted in the interests of the owner. It would have been wiser for the shipping interest to have accepted the abolition of the "advance-note system" rather than to have stated that they regarded it as necessary and as *their* idea of freedom of contract, and rather than have published for the information of seamen the oft-repeated statement that the men should insist on "freedom of contract." The shipowner may depend upon it that this is a dangerous cry for him. The seaman's idea of freedom may be dangerously different from the owner's idea thereof, and the ball having now been set rolling cannot be stopped. The policy of raising this cry is the more doubtful, when it is borne in mind that the law now in the interest of the shipowner deals more harshly with seamen for breach of civil contract, than with any other class of servant whatsoever; and that seamen are the only class amongst which freedom of contract does not, for consistently with the interests of the shipowner, it has been thought that it cannot exist. On the whole, the seaman may think it well that the clause was defeated. Its acceptance would have patched a bad system. Its defeat may lead to freedom in the seamen's sense.

THE BOARD OF TRADE REGISTER OF WRECKS, 1873-4.

I.—WRECKS AT HOME.

THE wreck abstract for the year 1873-4 is now before us. It is the first abstract that has been published for the complete twelve months beginning with July and ending with June, but, as the tables for former years, have been carefully re-adjusted in order to admit of comparison with the tables in this volume, the statistical value of the return is not in any respect impaired. There is, moreover, a great advantage in having all the wrecks of the winter included in one return.

As regards numbers of sea casualties only, the records of wrecks, *c.*, at home, during 1873-4 is, from a statistical point of view,

satisfactory. The total number of wrecks, casualties and collisions on and near the coasts of the United Kingdom was 1,803, and the total number of vessels lost or damaged was 2,191, showing a decrease, as against the year 1872-3, of 401 in the number of casualties, and 501 in the number of vessels lost or damaged. The difference between the number of casualties and the number of vessels is of course owing to there being two or more vessels involved in every collision.

As regards the nature of the casualties it is important that it be distinctly understood that in the number 2,191 are included accidents and casualties of nearly every description to ships near our coasts, entailing loss of a few pounds; the loss of a fishing boat and the entire loss of such ships as the *Northfleet*, the loss of a few sails or spars, or the slipping of an anchor, being included in the same tables with a dismasted or a water-logged vessel. This is an arrangement which seriously misleads careless readers, and has given opportunities for exaggeration to reckless statisticians. As regards tonnage, that is to say, the size of the 2,191 ships lost or damaged on or near our coasts, only 509 exceeded 300 tons, only 1,169 exceeded 100 tons burden; 713 were above 200 tons and the 2,191 vessels represented an aggregate tonnage of 507,643, against 693,092 in 1872-3, or a decrease in one year of 185,449 tons in the shipping lost or damaged on or near our coasts. The tonnage is no doubt considerably swelled by both vessels in collision being included; for example, when a little smack smashes herself against a large ship, both vessels and their tonnages are included in the tables as having been in collision, although the ship may be uninjured. As regards ages of ships, the nearly new ships meeting with casualties still bear a very high proportion to the whole number of vessels lost or damaged on or near our coasts—more than one-fourth; that is to say, 536 of the 2,003 vessels of which the ages were known, having been under 7 years old; 799 between the ages of 7 and 20; 518 between 20 and 40; 135 between 40 and 70, and 15 in excess of three score and ten, of which 2 reached the venerable age of 90, and 2 were centenarians.

We should like to see some alteration whereby these descriptive tables could be made to distinguish between serious and unimportant casualties, and to specify the particular trades in which the vessels were engaged, as it would be of service to know not only the ages of the vessels but also their occupation, and the nature of the casualties that befell them, and it would very much lessen the chance of misunderstanding.

As regards nationality, of these 2,191 vessels, 1,609 are known to have belonged to Great Britain and her dependencies with British Certificates of Registry; 151 were British or Colonial vessels but not registered under the Merchant Shipping Act, 1854; 363 were foreign vessels, and the nationality of the remaining 58 could not be traced.

As regards the classification of casualties, of the total number of wrecks, &c. (1,808), 381 were collisions and 1,422 were wrecks and casualties other than collisions. Only 346 of these 1,422 wrecks were attended with total loss of ship; 1,076 were casualties resulting in damage to hull, equipments, or apparel, more or less serious. The total losses of ships on or near the coasts of the United Kingdom, during the year 1873-4, were 118 under the average for the $18\frac{1}{2}$ years ended June, 1874, and the partial losses were 322 in excess of the average for the same time. The increase in the reports of the latter class is doubtless due to the improved arrangements effected by the Board of Trade for obtaining reports of minor casualties.

In the 381 collisions, of which 62 were attended with total loss, there were 769 vessels involved, of which 65 were totally lost, swelling the number of total losses of all kinds to 411, and of the partial losses to 1,780. One hundred and twenty-three collisions occurred in daylight and 258 at night.

Of the 411 vessels totally lost on and near our coasts, 142 were under 50 tons, 258 under 100 tons, and 324 under 200 tons; only 38 exceeded 400 tons.

The tonnage of these vessels totally lost is not distinguished in the tables from the tonnage of vessels partially damaged, but the numbers in the annexed table, which are an approximation from table 7, show that whilst nearly one-fifth of the whole number of wrecks, &c., were total losses, the tonnage of vessels totally lost was a little less than one-eighth of the entire tonnage of vessels lost or damaged. This disproportion is explained by the great preponderance of fishing smacks and other small craft among the vessels totally lost.

WRECKS, ETC., COASTS OF UNITED KINGDOM.

Vessels totally lost.		Vessels partially damaged.		Gross total of vessels lost and damaged.	
Number.	Tonnage.	Number.	Tonnage.	Number.	Tonnage.
411	65,650	1,780	441,993	2,191	507,643

The year 1873-4 was not marked by any great and destructive gale on our coasts such as gave an unhappy distinction to 1859 when the *Royal Charter* was wrecked, and to 1867, when, on the 1st and 2nd December in that year, the fishing fleet in the North Sea was nearly annihilated and many homes were rendered desolate; nor happily was there any great disaster such as the running down of the *Northfleet* to swell the number of lives lost. The most destructive gale of the year occurred on February

25th and 26th and was felt on nearly all our coasts, being especially severe over Scotland; the wind was from S. to S.S.E. There were also gales from the N. and W. on August 27th and 28th, October 20th and 23rd, November 1st and 22nd, December 16th, January 18th and March 19th; from E. on November 9th and 10th; from S. on December 29th and 30th; from S.E. on February 10th and 11th, and from S. and W. on April 1st and 3rd and April 12th and 13th. As usual, westerly winds appear to have been more destructive than easterly winds, but we are reminded that they are also far more common.

Of the 1,808 wrecks, &c., during 1873-4, 1,002 happened when the wind did not exceed a top-gallant breeze, called by fishermen a single-reef wind; 314 when the wind did not exceed a fresh gale, in which a well fitted and fully manned vessel should be able to hold her course, and 423 when the wind was at and above a strong gale. The remainder occurred when the wind was variable and unknown.

Here we might pause and speculate on the vast number of casualties that occurred in comparatively fine weather, and if moved by hasty generalization incontinently attribute them to unseaworthy, overladen or undermanned ships. We might also expatiate on the alleged hardened villainy of shipowners who, for the sake of their insurance, are said to send vessels to sea to sink under the feet of their crews in the first gale, leaving the poor fellows "*nantes in gurgite vasto*." We cannot however forget that the law as it at present stands, renders an owner's risk so great that it is little better than madness on his part to send his ship to sea intentionally to be lost; for, in addition to the sentimental inconvenience of having the lives of his servants on his head, there is the substantial danger, if detected, of forfeiting his policy of insurance and having to pay for the cargo, as well as of being indicted for a misdemeanour. Inordinate greed of gain will occasionally tempt unprincipled shipowners to connive at the loss of their vessels; but then swift and condign punishment should follow detection. We have a few such instances in our recollection and probably many more have never come to light, but recent revelations have shown us that such commercial immorality is not confined to the shipping trade and is happily not great in it. Emerson has remarked that "the ways of trade have grown selfish to the borders of theft, and supple to the borders, if not beyond the borders, of fraud." It is true that Emerson was not speaking of the shipping trade, but it is equally true that he does not, by express terms, exempt it. Unhappily, no trade is free from dishonesty; but we have reason to believe that dishonesty is less prevalent in the shipping trade than in any other. It would be difficult to choose between the commercial bubble floater who sows social ruin broadcast and the man who sends his rotten ship to sea regardless of the lives of his sailors. If the probability of detection were made as great as

possible and the punishment exemplary, the recurrence of the crime would, as in all like cases, be reduced to a minimum.

If, however, we were disposed to be pathetic, we might well lament over the carelessness, over-confidence, or incompetency of our seamen, which appear to have caused an alarming proportion of the losses on our coasts during the year. Of the 846 total losses, excluding collisions, 98 arose from the incompetence, over-confidence, or neglect of those in charge of the vessels; 30 from defects to the ships or their equipments, including unseaworthiness, overloading, defects in charts, gear, or construction, local attraction of compasses, &c.; 128 arose from stress of weather; 53 from various causes, including thick weather, striking on sunken wrecks, spontaneous combustion and fire of every kind, want of lights, buoys, pilots, &c.; and of 42 the causes of loss were unknown.

We may assume that these "causes" were carefully collated from the opinions of experienced men, and the decisions of courts of inquiry; and they show us that considerably more than one-fourth of the whole number of total losses, excluding collisions, on the coasts of the United Kingdom, arose from the incompetence, over-confidence, or negligence of those in charge of the vessels, whilst only 30 were owing to unseaworthiness, and all other kindred causes, such as bad charts, bad gear, local attraction of compasses, &c. Of the 1,076 wrecks and casualties, excluding collisions resulting in partial damage, 525 arose from stress of weather; 180 from carelessness or incompetence; 22 from unseaworthiness; 7 from overloading; 62 from defective construction, equipment, &c.; 251 from various causes, and the causes of the remaining 29 casualties were unknown.

Of the 62 collisions involving total loss, 7 were owing to thick weather or inevitable accident; 7 to unknown causes, and the remaining 48 to neglect of steering and sailing rules, bad seamanship, bad look-out, and other preventible causes. Of the 319 collisions resulting in partial damage, 41 were owing to cables parting, foul berth, &c.; 20 to thick weather; 42 to bad look-out; 113 to neglect of steering and sailing rules, neglect of lights, bad seamanship, incompetence and general negligence, and in the 42 remaining cases the causes of collision were unknown.

The loss of life on the coasts of the United Kingdom during 1873-4 was 506, being 312 below the average for the 9 years ending 1872, and 222 less than the number lost in the *first six months* of 1873. The number lost in the early part of 1873 was swelled by the wreck of the *Northfleet*.

The number of ships that contributed to the death-roll was 130, of which 95 were entirely lost and 35 sustained partial damage. Only 61 lives were lost in vessels that foundered, of which 30 were lost in fishing vessels; strandings contributed 200; collisions 76; and casualties from

shipwreck, does this kingdom

on our coasts 289 sets of rocket
Board of Trade and worked by
of the Mercantile Marine Fund.
with Captain Ward's cork life-jackets,
Fund, and half by public vote for
off to a wreck in the Coastguard

and 157 Volunteer Life Companies
formed for the purpose of making
life-saving apparatus, and able to
of, or in co-operation with, the
besides this noble corps, well armed
ing life, there were 267 lifeboats
mented parts of the coast, of which
ual Lifeboat Institution, and 32 to

on our coasts during the year were
ines, &c., from shore were instrumental
ened from most imminent danger as is
uly, page 538. Lifeboats rescued 310 ;
all craft 309 ; passing ships picked up
wn boats, and 225 were saved by various
is named above.

charts in the return will show how thickly
"cherubs" are planted "to look after the

—WRECKS ABROAD.

formidable part of the return. It includes all
British ships elsewhere than on the coasts of
and it also includes wrecks of foreign ships on the
sessions abroad, reported to the Board of Trade
e, 1873, to June, 1874. All missing British vessels,
from one port to another in the United Kingdom, are
return, and swell the total of lives lost to an unprece-
The annexed table shows the number of vessels lost
and the number of lives lost, and distinguishes between
foreign vessels. The foreign ships included are only such as
the coasts of our own colonies :—

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possible and the punishment exemplary, the recurrence of the crime would, as in all like cases, be reduced to a minimum.

If, however, we were disposed to be pathetic, we might well lament over the carelessness, over-confidence, or incompetency of our seamen, which appear to have caused an alarming proportion of the losses on our coasts during the year. Of the 346 total losses, excluding collisions, 93 arose from the incompetence, over-confidence, or neglect of those in charge of the vessels; 30 from defects to the ships or their equipments, including unseaworthiness, overloading, defects in charts, gear, or construction, local attraction of compasses, &c.; 128 arose from stress of weather; 53 from various causes, including thick weather, striking on sunken wrecks, spontaneous combustion and fire of every kind, want of lights, buoys, pilots, &c.; and of 42 the causes of loss were unknown.

We may assume that these "causes" were carefully collated from the opinions of experienced men, and the decisions of courts of inquiry; and they show us that considerably more than one-fourth of the whole number of total losses, excluding collisions, on the coasts of the United Kingdom, arose from the incompetence, over-confidence, or negligence of those in charge of the vessels, whilst only 30 were owing to unseaworthiness, and all other kindred causes, such as bad charts, bad gear, local attraction of compasses, &c. Of the 1,076 wrecks and casualties, excluding collisions resulting in partial damage, 525 arose from stress of weather; 180 from carelessness or incompetence; 22 from unseaworthiness; 7 from overloading; 62 from defective construction, equipment, &c.; 251 from various causes, and the causes of the remaining 29 casualties were unknown.

Of the 62 collisions involving total loss, 7 were owing to thick weather or inevitable accident; 7 to unknown causes, and the remaining 48 to neglect of steering and sailing rules, bad seamanship, bad look-out, and other preventible causes. Of the 319 collisions resulting in partial damage, 41 were owing to cables parting, foul berth, &c.; 20 to thick weather; 42 to bad look-out; 113 to neglect of steering and sailing rules, neglect of lights, bad seamanship, incompetence and general negligence, and in the 42 remaining cases the causes of collision were unknown.

The loss of life on the coasts of the United Kingdom during 1873-4 was 506, being 312 below the average for the 9 years ending 1872, and 222 less than the number lost in the *first six months of 1873*. The number lost in the early part of 1873 was swelled by the wreck of the *Northfleet*.

The number of ships that contributed to the death-roll was 130, of which 95 were entirely lost and 35 sustained partial damage. Only 61 lives were lost in vessels that foundered, of which 30 were lost in fishing vessels; strandings contributed 200; collisions 76; and casualties from

various causes, such as explosions, heavy seas, &c., 68. Missing vessels were exceptionally numerous, involving the loss of 101 lives. Altogether, there were 78 lives lost in fishing vessels; 394 in other sailing vessels, and 34 in steamships.

It may be remarked that of the 130 wrecks and casualties attended with loss of life on or near our coasts 25 happened to foreign vessels, involving the loss of 103 lives.

The annexed table, extracted from the list of casualties involving loss of life in the return, will show the loss of life in the various carrying trades upon our coasts. It will be seen that colliers and fishing vessels contributed nearly one-half of the lives lost:—

LOSS OF LIFE ON OR NEAR THE COASTS OF THE UNITED KINGDOM.

Nature of Cargo.	Number of Vessels.	Tonnage.		Lives Lost.
		Actual.	Average per ship	
Coal, Stone, &c.	40	6,705	167	155
Iron and other ores	6	327	54	21
Timber	11	3,565	324	71
Grain	11	1,697	154	54
Manure and Salt	10	3,946	394*	49
Other Cargoes	10	3,198	319	37
Ballast	11	2,581	234	36
Unknown	3	106	35	5
Fishing Vessels	28	486	17	78
Total	130	22,611	174	506

* This includes vessels laden with guano.

Official inquiries were held in 23 cases of loss of life, and, as usual, incompetence and neglect are credited with the greatest number—14 being due to these causes, whilst 4 arose from stress of weather, 3 from unseaworthiness, and defective construction, and of the remaining two the causes were not discovered.

A chart is this year added to the abstract which will correct the general but erroneous impression created by the charts in Mr. Plimsoll's book, that the black dots so thickly strewed along the coasts represented terrible shipwrecks attended in most instances with deplorable loss of life. The chart referred to is a general chart of the United Kingdom showing only the wrecks, casualties, and collisions (130) attended with loss of life, and distinguishing partial from total loss of ship.

We leave these tables of disaster, served up in almost endless variety by the Marine Department as by a skilful *chef*, and turn with relief to the work done during the year by the Board of Trade and the National Lifeboat Institution in saving life from shipwreck. As in the extent of its shipping and commerce, and unfortunately in the number of its vessels that come to grief, so also in the means provided by national and indivi-

dual humanity, for salvage of life from shipwreck, does this kingdom stand pre-eminent.

At the end of June, 1874, there were on our coasts 289 sets of rocket and mortar apparatus, belonging to the Board of Trade and worked by the Coastguard, provided and paid for out of the Mercantile Marine Fund. There were also 531 stations supplied with Captain Ward's cork life-jackets, paid for, half by the Mercantile Marine Fund, and half by public vote for the use of the Coastguard when going off to a wreck in the Coastguard boats.

There were 7 Volunteer Life Brigades and 157 Volunteer Life Companies of the then total strength of 3,202 men, formed for the purpose of making persons on the coasts familiar with the life-saving apparatus, and able to use it in case of shipwreck, independently of, or in co-operation with, the Coastguard and receivers of wreck. Besides this noble corps, well armed and equipped for the purpose of saving life, there were 267 lifeboats stationed in dangerous and much frequented parts of the coast, of which 235 belonged to the Royal National Lifeboat Institution, and 32 to harbour authorities, beachmen, &c.

The lives saved from shipwreck on our coasts during the year were 3,060. The rocket apparatus and lines, &c., from shore were instrumental in saving 175 lives; these were rescued from most imminent danger as is fully explained in our number for July, page 538. Lifeboats rescued 310; luggers, Coastguard boats and small craft 309; passing ships picked up 516; 1,525 got ashore in their own boats, and 225 were saved by various means, not included in the means named above.

A reference to the admirable charts in the return will show how thickly and judiciously these prosaic "cherubs" are planted "to look after the life of poor Jack."

II.—WRECKS ABROAD.

This is by far the most formidable part of the return. It includes all wrecks and casualties to British ships elsewhere than on the coasts of the United Kingdom, and it also includes wrecks of foreign ships on the coasts of British Possessions abroad, reported to the Board of Trade during the year, June, 1873, to June, 1874. All missing British vessels, except those bound from one port to another in the United Kingdom, are included in this return, and swell the total of lives lost to an unprecedented number. The annexed table shows the number of vessels lost and damaged, and the number of lives lost, and distinguishes between British and foreign vessels. The foreign ships included are only such as were lost on the coasts of our own colonies:—

WRECKS ON THE HIGH SEAS AND ABROAD.

Where Registered.	Number of Vessels.			Lives.	
	Totally lost.	Partially damaged.	Total.	Lost.	Saved.
United Kingdom.....	456	1,634	2,090	2,431	5,874
British Possessions	433	571	1,004	1,582	5,073
Foreign Countries	50	84	134	21	1,118
Total	939	2,289	3,228	4,034	12,065

No attempt is made to classify these wrecks, &c., according to their causes, but we hope that in future years, when the Board of Trade shall have perfected their arrangements for obtaining returns, this classification will be effected. Inquiries were, however, held in many of the more important cases, and the results show what a large proportion were owing to incompetence and negligence. (*See Inquiries.*) It will be seen from the above table that more than one-half of the vessels totally lost belonged to British Possessions and foreign countries. The terrific hurricane that raged along the American coast from the 23rd to the 25th August, 1873, and broke up the Nova Scotian vessels like eggshells, leaves its mark on this return. On reference to the charts with which the return is illustrated, we find that the Canadian coasts are literally covered with the red and blue dots as thick as fly marks which denote total and partial shipwrecks, and probably many of the crosses ranged in rows at both sides of the Atlantic, and represent missing vessels, are records of the same gale.

Passing over the descriptive tables, which show that more than half the "total" wrecks occurred to vessels under 200 tons, and that 186 of the 8,094 British vessels lost or damaged were over thirty years of age, we come to the loss of life tables. Here we find a fearful increase on previous years, and we think it right to point out with prominence that legislation, surveys, classifications, inquiries, and philanthropic effort have hitherto failed to reduce the terrible tribute that the "melancholy ocean" levies upon trespassers, or to make the lives of seamen more secure. This year's return for wrecks happening abroad is far more terrible than any that it has ever been our lot to review. Many causes have doubtless contributed to make the present return of wrecks abroad the worst hitherto published; for instance, the alteration in the period treated of in the return, which gathers into it all the wrecks of the disastrous (northern) winter of 1873-74. The Act of 1873, which renders it compulsory on owners to report missing vessels as soon as they are given up as lost. This provision brings into the return many vessels which should have appeared in former returns, and many vessels (that sailed during 1873-4) which would not have been reported in

time under the old arrangement. In the similar list of missing vessels published last year, we find that the last vessel, in order of date, sailed on 25th February, 1873; whereas, in this return, the last vessel included sailed on 11th April. We may, therefore, assume that the reports of the missing vessels included in the present return are considerably in excess of the average of reports included in the previous one.

Of the 3,228 vessels that met with loss or casualty, life was lost in 335 vessels only, of which 243 vessels were totally lost, and 92 partially damaged; 283 of these were laden vessels, 40 were in ballast, and in the remaining 12 cases it is unknown whether the vessels were laden or light.

The following table shows the nature of the casualties in which lives were lost :—

LOSS OF LIFE ON THE HIGH SEAS AND ABROAD.

	Number of Vessels.	Tonnage.	Lives Lost.		
			Crew.	Passengers.	Total.
Foundering.....	28	9,659	193	846	1,039
Strandings	67	27,446	373	83	456
Collisions	6	1,184	16	11	27
Missing Vessels	131	58,748	1,825	455	2,280
Other Causes	103	55,086	187	45	232
Totals	335	152,123	2,594	1,440	4,034

The unusually large number of lives lost by foundering, is owing to the loss of the barque *Asia*, bound from Amoy to Penang, with 800 coolies and 21 of her crew.

The annexed table will show the cargoes with which the majority of the missing vessels were laden—namely, coal, grain, and timber, and we can only wish success to the Committee on Spontaneous Combustion of Coal in Ships, in their efforts to discover a safe method of carrying this dangerous cargo :—

Cargo.	Number of Vessels.	Lives Lost.	Cargo.	Number of Vessels.	Lives Lost.
Coal	36	525	Other Cargoes ...	39	651
Grain	23	*710	Ballast and Un-		
Timber	12	167	known	9	126
			Fishing Vessels ..	12	101
			Total	131	2,280

* The ship *Indus* swells this number with 42 crew and 378 coolies.

It is clear that if safety in superintending loading is to be sought, it must be sought by the regulations of owners or underwriters, or by super-

intendence in the country where the ship loads. Canada has dealt satisfactorily with the loading of grain cargoes, and the New York underwriters with grain cargoes with like results. In Canada *all* ships, British and Foreign alike, are surveyed by port wardens when loading, and after having loaded grain. We notice the fearful loss of life in grain laden ships, many of which come from the Black Sea. Is it too much to ask grain carriers to *try* to carry grain in ships that will carry it, and not in "awning" or "spar"-decked ships with empty compartments like bladders in their bottoms. The only way for shipowners to prevent interference is to do the work for themselves, to fit shifting boards and to load moderately, or failing that, is it too much to ask Lloyd's, as representing the London underwriters, to make some arrangement for safe stowage and carriage of grain in ships they insure. The British shipowner may prevent the necessity for foreign interference, by putting the grain into ships that can carry it, and by stowing it so that it will not turn the ship over, with the inconvenient result to third parties—that is to say, to the crew.

We recollect that certain members of the Society of Friends visited the Emperor of Russia during the Crimean war, with a view to getting him to stay his hand and stop the slaughter of soldiers; and we have heard, but we do not vouch for the fact, that certain English gentlemen, headed by an eminent philanthropist, propose to visit the Emperor this autumn with a view to asking his Imperial Majesty to cause instructions to be issued to stop the reckless loading of ships bringing grain from his dominions.

III.—WRECKS AT HOME AND ABROAD.

We have not sufficient space, nor indeed is it necessary, to give a complete *resumé* of the wrecks in Divisions I. and II., but the following tables will show the entire number of "total" and "partial" losses from shipwrecks both at home and abroad, and the loss of life involved during the year 1878-4:—

	Vessels.			Lives.	
	Totally Lost.	Partially damaged	Total.	Lost.	Saved.
Wrecks, &c., of British and Foreign Ships at Home.....	411	1,780	2,191	506	3,060
Ditto in British Possessions Abroad.....	427	439	866	569	6,764
Wrecks of British Ships in Foreign Countries and at Sea	512	1,850	2,362	3,465	5,301
Totals	1,350	4,069	5,419	4,540	15,125

The foregoing, as well as the following table includes foreign vessels wrecked in British jurisdiction, and many small unregistered British and Colonial vessels:—

	Vessels.			Lives Lost.		
	Totally Lost.	Partially damaged	Total.	Crew.	Passengers.	Total.
Foundering	47	1	48	253	847	*1,100
Strandings	100	4	104	570	86	656
Collisions	24	7	31	88	15	103
Missing Vessels	150	0	150	1,926	455	†2,381
Other Causes	17	115	132	252	48	300
Totals	338	127	465	3,089	1,451	4,540

* Swelled by the number of lives (821) lost in the coolie ship *Asia*.

† Swelled by the number of lives (420) lost in the coolie ship *Indus*.

The most unsatisfactory feature in the present wreck return is the great number of *missing* vessels. Notwithstanding the reasons we have given for the exceptional increase in the receipt of reports of this class of losses in the year, the numbers are truly alarming. Let us think what the numbers are! *Missing vessels*; vessels that no one knows anything about! Besides all the *known* and described wrecks, with their 2,100 lives lost, 150 British ships disappeared, clean gone, wiped out like a grease spot, never heard of after leaving port; and this in one year's records. With the 150 missing ships there are also 2,381 missing men—a good many struck off the muster-roll in a year from one “class” of casualty only. “Being missing” costs the country something. No one can tell the cause of loss; but from evidence as to the loss of other ships it is only reasonable to put them down chiefly to unseaworthy seamen, some to inevitable accident, and some to defects. Would surveys of the ships have prevented the loss? We find on reference to the Registers of Lloyd's, the Liverpool Book, and the Bureau Veritas, that nearly 60 per cent. of the finest of these missing vessels were classed in one or more of these registries, 60 per cent. we know to have been classed, and probably many of the colonial vessels were classed in local registers. It would therefore be idle to suppose that universal classification would be a sufficient remedy for these disasters, when more than half of the missing vessels in this, the worst year we have ever had, are known to have been surveyed and classed in one or other of the three of the very best associations in the world. We observe, also, that considerably more than half these missing vessels sailed from foreign and colonial ports,

REWARDS.

In addition to pecuniary rewards the Board of Trade made 68 presentations of gold watches, binocular glasses, medals, &c., during the year, to persons for saving life at sea. Foreign Governments also presented rewards of various kinds to 80 British shipmasters and others for saving the lives of foreigners.

The much-valued decoration of the Albert Medal was only awarded in one instance during the year: an Albert Medal of the 2nd class was presented to David Webster, 2nd mate of the *Arracan*, which was abandoned on fire in the Indian Ocean, for preventing the seamen in the boat in which he left the ship from resorting to cannibalism when maddened by hunger and thirst.

OFFICIAL INQUIRIES.

Investigations were held in 314 cases of wrecks, casualties, and collisions, being a great increase on the number held in any former year. The increase appears chiefly in the inquiries held at home which sprang from 49 in 1872 to 59 in the first six months of 1873, and to 189 in the year 1873. It is probable, therefore, that an inquiry is now held in every case of wreck where the slightest suspicion of foul play, neglect or incompetence, exists. The annexed table shows the nature of the casualties into which investigations were held :—

Nature of Investigation.	Strandings.	Foundering, Abandonments, &c.	Collision.	Fire, Explosions, &c.	Other Causes.	Total.
Inquiries at Home ...	112	40	23	8	6	189
Inquiries in British Possessions Abroad } Naval Courts	79 21	6 3	6 0	5 1	3 1	99 26
Total	212	49	29	14	10	314

The annexed table shows more clearly than any words of ours, what a large proportion of the worst wrecks that occur are owing to the incompetence and negligence of seamen :—

Nature of Investigation.	Neglect, &c.	Faulty Construction and Unseaworthiness.	Overloading, Bad Stowage, &c.	Defects in Equipment &c.	Stress of Weather	Fire and other Accidents.	Total
Inquiries at Home	104	9	10	4	21	18	166
Inquiries in British Possessions Abroad } Naval Courts	51 15	2 1	1 1	6 0	24 2	9 7	93 26
Total	170	12	12	10	47	34	285

OUR COLONIES.—XII.

AS PROFITABLE FIELDS FOR EMIGRATION AND INVESTMENT OF CAPITAL.

IN the course of the series of articles on our Colonial Possessions we have dwelt upon their extent, varied natural resources, shipping, and fisheries, but there is no end to the changes of the kaleidoscope, when we attempt to take a continuous survey of the various aspects in which they may be regarded as connected with, and benefiting the mother country. Their social and civil condition, education, religion, arts, and manufactures would all form fertile and interesting topics of discussion. There is one prominent feature, however, which cannot well be passed over in the retrospect we are taking, and that is the mutual benefit that has resulted to the parent State and to her numerous offshoots by the steady flowing tide of Emigration.

In the early days of settlement in Australia and New Zealand before gold, that active incentive to emigration, had been heard of there, it was difficult to tempt men to brave the tedium of a long and expensive voyage and the dangers of early colonisation. It was found hard too, to rend the tie which bound men to poverty in their native land. Prosperity had not then showered its success on pastoral and agricultural industry, and fortunes were not then made in a day. Instead of sending forth, as now, our population at the rate of nearly a thousand a day, the proportion was scarcely that number per week. The Land Fund of Australia has now become gigantic, and such unprecedented prices are obtained by the Government for some plots, that they cannot dispense their funds fast enough, so that shipload after shipload of free or assisted emigrants are sent out by the Agents-General in London for the various colonies.

Of the different subjects which occupy the attention of the family man, and the industrious agriculturist of small means—pent up and confined within a limited circle at home—with expenses of all kinds increasing about him, food and clothing and taxes becoming dearer, it is but natural that he should turn longingly to other fields where competition is less active, land more easily obtained, and the fruits of his labour better rewarded. Hence we find the favoured field of the mechanic and labourer is the colonies, and the flood tide sets there strongly and continuously.

Emigration has thinned our workhouses and made thriving colonists of our paupers; it has caused populous settlements to spring up in heretofore desert places, which, by industry and commerce, have risen into importance with marvellous celerity; it has given hope, energy, and

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Emigration has thinned our workhouses and made thriving colonists of our paupers; it has caused populous settlements to spring up in heretofore desert places, which, by industry and commerce, have risen into importance with marvellous celerity; it has given hope, energy, and

activity to men who had previously none of those incentives to progress, owing to the existing competition and pressure around and about them at home; and who, in the race for fortune, lacking that main element of success, capital, saw no bright future for themselves and their families. Removed, however, from these depressing influences—with a wider scope and a purer atmosphere, where the soil gives forth in abundance in return for their labour, where their industry meets its due reward, and each man is estimated alone by his industrial worth—they have become active and important members of society, and their children a blessing, not a burden to them. By their aid they have doubled year by year the produce of the soil, have extended the elements of prosperity, acquired land which attaches them firmly to the colony, and every colonist also becomes a larger consumer of British manufactures than any foreign customer. It is by the strong arm and the active energies of our emigrants that the Canadian Dominion, the South African Colonies, Australia and New Zealand, have become what they now are.

Every newly introduced working immigrant in a year or two creates a demand for another to supply his vacated place, as he rises in the scale of advancing progress, and is lifted by the improving fortunes of the colony, and his own activity and untiring industry, into a higher position in society.

In England the chances of success in agricultural progress are very limited, while only manufactures and commerce are open to enterprise, and even in these capital is necessary. But in our Colonial Possessions a man of enterprise and industry can make way, and rise steadily and surely with the advance of the colony in which he settles, well-fed, well paid, and lightly taxed.*

Never, perhaps, was there so general a competition on the part of the various Colonial governments to draw immigrants to their shores as now. Nearly every distant province and dependency of the Empire is in the home market bidding largely and liberally for the steady elements of future prosperity, an active and industrious population, "a bold peasantry, their country's pride." By judiciously directing the flow of the stream of this living tide where it may utilise the waste lands of the colonies, we not only provide for the immediate exigencies of our superabundant population, but we preserve to ourselves in our own territories the main element of national strength, and thus render it conducive to the permanent stability and welfare of the Empire.

In both our northern and southern colonies there is still room and need for thousands of all classes, where there are now only tens. The pro-

* P. L. Simmonds on "Colonial Aids to British Prosperity," address at the Royal Colonial Institute, January, 1874.

gress and development of those colonies depend entirely upon immigration, and the mother country and the people would be alike benefited by the change. Here, hard work may win bread for the day, but no more, and often not that; while, in any of the colonies an industrious man must succeed and advance, and by steady application, will in the course of years acquire a competency, if not affluence, and he has also at the same time ample scope for placing out his family comfortably, however numerous.

With so small a part of her vast territory occupied, there is room enough still in Canada for thousands of settlers, each of whom may locate on a farm of his own, of one hundred or several hundred acres, according to his means of bringing it under culture. Canada is a fertile country and notwithstanding her geographical position and the rigour of her climate, she can and does compete favourably with any colony belonging to the British Crown. Canada is a nation of landowners, a renting farmer being almost unknown. The motto of her capital is "Industry, Intelligence, and Integrity," and her emblem is the beaver. These qualifications are required by all who desire to succeed in a country situated like the British American Provinces; but when exercised they cannot fail, humanly speaking, to command success. There are no monopolies, exclusive privileges, or great and impassable gulfs between grades of society, such as exist in older countries, to check or arrest the progress of the honest and industrious man.

We have not the returns available for the whole of the colonies, or else it would be curious to trace what proportion of the entire population is of British, and what of foreign origin. Taking the last census returns we find that there were—

	English.	Irish.	Scotch.	Welsh.
Canada (Ontario and Quebec) ...	509,251	682,920	375,347	5,565
New Brunswick ...	88,598	100,643	40,858	1,096
Nova Scotia ...	113,520	62,851	130,741	1,112
Victoria ...	164,287	100,468	56,210	6,614

Of the various offshoots from the parent trunk there is not a sapling of which the Empire has more reason to be proud, or which gives promise of a more brilliant future and abundant fruit than Victoria. Although its bays and shores and gold-fields may have occasionally echoed a burdened sigh or careworn aspiration from the luckless or disappointed, yet to thousands has she been the bountiful dispenser of untold treasures, and to thousands yet unborn will she most probably afford a happy home. None of her children has the mother country reared at so little expense and trouble to herself; indeed, scarcely a penny of the national revenue was ever spent on Victoria; and no one of the colonies has ever before,

so like Joseph of old, heaped up peace and plenty in return for the neglect so long practised on the Australian people, in utter disregard of their grievances and oft reiterated remonstrances.

We might turn also to New Zealand and New South Wales and speak of South African success and progress, but all these points have been fully demonstrated in the unmistakeable statistical facts brought together in the preceding papers.

Let us now proceed to show the homes which the colonies have furnished for our people.

Taking the emigration from the country in decennial periods, we find that, in the several years ending as follows, the proportion that went to our North American and Australian colonies out of the total who left the kingdom were as follows :—

			To the Colonies.		Total Emigrants.
1829	...	...	138,209	...	216,114
1839	...	...	374,040	...	669,314
1849	...	...	605,313	...	1,494,786
1859	...	...	756,997	...	2,439,585
1869	...	...	457,820	...	1,839,099
1873, 4 yrs....	...	...	208,975	...	1,115,200
			<hr/> 2,535,854		<hr/> 7,774,098

This shows a very fair proportion, if not quite a moiety.

Between 1815 and 1873 just above 5,000,000 left our shores for the United States, and no doubt many crossed the borders from Canada. But still it is satisfactory to find that our distant colonies are being more largely patronised of late years, despite the shorter and cheaper trip across the Atlantic. Besides this officially recorded emigration, a large number leave in passenger ships and steamers which do not come under the supervision of the Emigration Commissioners and their officers, and 13,000 or 14,000 leave for what are termed in the Emigration Report, "other places," which comprise the Cape Colony, Natal, and others of our possessions beyond the seas.

But it is not alone the increase by direct emigration from the mother country which we have to consider in viewing the present position of our colonies, there has also been a great accession of arrivals from foreign ports and a necessary increase by births, and it will be well therefore to compare the population of the Colonies at two periods 1850 and 1871; for some few however there are no returns available for the former year. There are several too which have largely increased by imported Coolie, Chinese, and other native labour, most of which has become domiciled in the Colonies, as in Hong Kong, Labuan, Mauritius, Victoria, some of the West India islands, and British Guiana.

				1850.		1871.
<i>Eastern Colonies—</i>						
Straits Settlements	...	...	...	—	...	308,097
Ceylon	...	...	...	1,575,553	...	2,405,287
Mauritius	...	...	...	180,868	...	818,584
Labuan	...	...	...	1,150	...	4,898
Hong Kong	...	...	...	83,143	...	124,198
				<hr/>		<hr/>
				1,790,709		8,161,064
<i>African Colonies—</i>						
Natal	...	...	...	120,627	...	289,778
Cape Colony	...	...	...	285,279	...	566,158
St. Helena	...	...	...	6,268	...	6,241
Lagos	...	...	...	—	...	62,021
Gold Coast	...	...	...	151,846	...	408,070
Sierra Leone	...	...	...	44,472	...	55,873
Gambia	...	...	...	4,851	...	14,190
Falkland Isles	...	...	...	433	...	811
				<hr/>		<hr/>
				613,271	...	1,402,637
<i>North American Colonies—</i>						
Ontario and Quebec	...	...	...	1,842,265	...	2,812,867
New Brunswick	...	...	...	193,800	...	285,594
Nova Scotia	...	...	...	276,117	...	887,800
Manitoba	...	...	...	—	...	11,953
Prince Edward Island	...	...	...	62,449	...	94,012
British Columbia and Vancouver	...	...	...	—	...	10,586
Newfoundland	...	...	...	96,506	...	146,536
Bermuda	...	...	...	11,092	...	12,121
				<hr/>		<hr/>
				2,482,229	...	8,760,978
<i>Central American—</i>						
Honduras	...	...	...	—	...	12,121
British Guiana	...	...	...	127,695	...	193,491
				<hr/>		<hr/>
				127,695	...	205,612
<i>Mediterranean—</i>						
Gibraltar	...	...	...	12,182	...	16,454
Malta	...	...	...	125,799	...	141,918
				<hr/>		<hr/>
				137,981	...	158,372
<i>West Indian Colonies</i>						
	...	...	...	793,430	...	1,062,077
				<hr/>		<hr/>
Total	...	...	...	5,945,815		9,700,740

This gives an aggregate peasant population for the Colonies of 9,700,740, and the population now under our rule there, may be said to be double what it was a quarter of a century ago, If we had available the latest returns as well as the numbers of the aborigines (not included in the census), it would be much more. But adding the population in India, 190,663,623, we have in our outlying possessions six times the population of the mother country.

The following figures clearly prove that emigration has been instrumental in keeping down the aggregate amount expended in the kingdom for the relief of the poor. Although our population is larger by four and three-quarter millions than it was a quarter of a century ago, yet the sum annually expended for the relief of the poor is less by about one million, and the number of paupers smaller by more than 600,000 :—

Number of paupers in the kingdom—

				1849.		1874.
Population	...	...	...	27,658,704	...	32,412,010
Paupers in England and Wales...				934,419	...	829,281
„ Scotland	...	...		82,357	...	111,996
„ Ireland	...	...		620,747	...	79,633
				1,637,253	...	1,020,910

Expended in actual relief of the poor—

				1848.		1873.
England and Wales	...	...		8,047,485	...	7,692,169
Scotland	...	...		544,334	...	873,076
Ireland	...	...		1,835,634	...	930,240
				£10,427,453		£9,495,485

It would be a curious feature to ascertain the amount of money that has been sent home by successful emigrants to assist in bringing out their friends and relatives ; that the amount must necessarily be large is evident from the fact that between 1855 and 1858 upwards of £2,000,000 was remitted to this country by Irish emigrants to Canada and the United States to bring out their friends. Official returns show, too, that from £500,000 to £700,000 is remitted annually to this country in money orders from the Colonies, besides bank drafts and other modes of remittance. From New Zealand, from £40,000 to £50,000 is sent yearly in money orders.

As emigration fields, the Colonies may be divided into two great groups—the Australasian and the North American, and the proportion of colonists which each has absorbed is shown in the following return :—

Ten yrs. ending.	N. American Colonies.	Australasia.	Other places.
1829 ...	125,516 ...	7,695 ...	2,664
1839 ...	820,766 ...	53,274 ...	2,782
1849 ...	478,376 ...	126,937 ...	26,453
1859 ...	258,460 ...	498,537 ...	51,767
1869 ...	169,885 ...	287,435 ...	66,032
1873, 4 yrs.	187,379 ...	71,596 ...	44,487

The direct emigration from Great Britain to each of the separate Australian Colonies has been as follows:—

To New South Wales—

In the ten years ending	1849 ...	47,068
“ “	1859 ...	93,117
“ “	1869 ...	28,168
In the three years ending	1872 ...	8,111

171,464

To Queensland—

In the thirteen years ending	1872 ...	57,230
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To Victoria—

In the ten years ending	1849 ...	34,644
“ “	1859 ...	288,376
“ “	1869 ...	118,115
In the three years ending	1872 ...	20,942

462,077

To Tasmania—

In the ten years ending	1849 ...	4,359
“ “	1859 ...	16,412
“ “	1869 ...	1,621
In the three years ending	1872 ...	234

22,626

To South Australia—

In the ten years ending	1849 ...	27,903
“ “	1859 ...	63,072
“ “	1869 ...	17,445
In the three years ending	1872 ...	973

109,393

To Western Australia—

In the ten years ending	1849 ...	1,217
“ “	1859 ...	4,148
“ “	1869 ...	2,360
In the three years ending	1872 ...	124

7,849

To New Zealand—

In the ten years ending	1849	...	...	...	11,746
" "	1859	...	...	...	93,412
" "	1869	...	...	...	68,784
In the three years ending	1872	...	...	...	13,496

127,438

It is curious to trace the progress of Australia since the first settlement in New South Wales a little more than eighty years ago. For upwards of twenty years the Colony made little or no advance, indeed, it was not till 1840 that a new era commenced which led to rapid strides in pastoral, agricultural, commercial, and industrial pursuits; then the gold discovery in 1851 caused an advance more remarkable than could have been anticipated by the most sanguine mind. In 1803 Tasmania (then called Van Diemen's Land) was settled. South Australia, about half of whose geographical limits were included in the original Colony, was founded in 1836. Victoria was separated from New South Wales in 1851, and Queensland in 1859.

Upwards of a generation has passed away since a small craft, aptly named the *Enterprise*, was moored fast to some trees on the banks of the Yarra at the foot of a well grassed hill. The hill called Pleasant Hill by the new comers (and subsequently Batman's Hill) has disappeared, but the little companionship of fourteen souls borne by that craft from Van Diemen's Land in August, 1835, to Port Phillip has widened into a people, for the population of the Colony of Victoria (formerly the district of Port Phillip) now exceeds 797,000.

Since 1819 we find then that about 8,000,000 souls have left our shores for various destinations. Of these, two and three-quarter millions have proceeded to the emigration Colonies, besides an undefined number to the South African and other Colonies. A very large proportion of them must have carried with them the experiences of our improved agriculture, a recollection of the various masterly products and arts of the country, some intimacy with the vast manufacturing industries of England, and a general knowledge of her deficiencies and requirements in raw materials. Each one of these emigrants by improved circumstances has become a larger consumer and a better customer than if he had remained at home.

Not only as fields for emigration and the settlement in life of our surplus population, but also as spheres of profitable investment for capital, the Colonies offer advantages. No Colonial Government has ever been a defaulter to the public creditor, and hence Colonial securities are for the most part above par. Our Colonies and India have a preference in the money market with investors, and their securities command

relatively higher prices than others. The majority of these investments are safe and remunerative, and have less of the speculative and scheming character than those of many foreign projects.

Besides the various Colonial banking institutions, in the metropolis there are not less than 150 commercial, financial, and industrial companies connected with the Colonies and India, having offices in London, in whose operations a large amount of British capital is invested.

There are in London twenty-eight banks doing business with India and our Colonies, having an aggregate paid up capital of £21,000,000.

The North American Colonies have no less than forty-six banking companies located as follows :—

	No.	Paid-up Capital.
Canada	19	£9,267,000
British Columbia	2	1,250,000
Nova Scotia	12	470,000
New Brunswick	7	910,000
Newfoundland	2	75,000
Prince Edward Island...	4	50,800
	<hr/> 46	<hr/> £14,022,800

The Australian Colonies have in all thirty-four banking establishments with branches divided as follows :—

New South Wales	9	£7,668,780
Queensland	5	—
Victoria	12	1,921,780
South Australia	6	750,000
Western Australia	2	20,000
Tasmania	5	223,650
New Zealand	5	881,626
	<hr/> 34	<hr/> £11,415,886

The paid-up capitals of the banks are only once given where they carry on business in several Colonies.

By the latest statistical returns, we find that there were in Victoria in 1878, ten banks of issue, and these had 231 branches or agencies in the Colony. Their capital stock paid-up was £8,866,250. This of course includes banks doing business also in other Colonies. Their assets amounted to £20,000,000, and the average rate of dividends for all the banks exceeded 10 per cent. In the savings banks there was £1,500,000 at deposit, being an average for each depositor of £25 12s.

South Africa—

	No.	Paid-up Capital.
Cape Colony	25	£1,800,371
Natal	4	83,706

Eastern Colonies—

				No.		Paid-up Capital.
Ceylon ...	...	...	...	8	...	£2,422,500
Hong Kong	...	...	...	6	...	8,814,000
Mauritius	...	...	...	2	...	200,000
West Indies	...	...	...	8	...	785,804

Of the ninety-five millions sterling expended on railways in India, and the numerous other millions for the construction of railways and telegraphs in the Cape, Australia, and North America, and the West Indies, nearly all has been furnished by English capitalists, and have proved profitable investments.

There are many other ways in which the Colonies find profitable employment for labour and capital in the constructive arts, in the inter-Colonial and direct commerce, but to dwell upon these would carry us too much into detail. It will have sufficed to have directed attention to the most salient points.

The carrying trade coastwise at Hong Kong is now done almost entirely by steamers, and the large number employed on the coast, and in connection with the port, give regular employment to engineers. So in the Indian, Australasian and North American ports good engineers are always in request. The rapid progress making in India and the Colonies in the extension of railways and telegraph lines, and the establishment of manufacturing of various kinds, leads to a constant demand for intelligent skilled labour. The Colonies offer an extensive field for the employment of British engineering skill and manufacturing industry in the great demand for surveys, railways, locomotives, carriages, telegraph wires, submarine cables, and machinery of various kinds.

We have shown enough in these facts and remarks to prove that immigration is the main stay of Colonial progress, and that every newcomer by his industry and intelligence naturally aids in the advancement of the Colony in which he settles.

The mother country may also truly say of her colonies as the Roman mother of her children, "these are my jewels"—long may they add splendour to the British diadem, and never let us neglect them or depreciate their value. Separated, but not alienated, they lovingly cling to the parent, and help and aid her in any emergency, and are as justly proud of their origin as we are of their rising greatness.

THE ANNEXATION OF NEW GUINEA.

THE kidnapping of Polynesian natives led indirectly to the annexation of Fiji, and it would not be strange if the annexation of the great and, comparatively, unknown island of New Guinea should be referable to the same cause. Certain it is, that there is a movement on foot in Sydney, having for its avowed object the incorporation of New Guinea with the Australian possessions of the British Crown; and at a meeting held in the capital of New South Wales, on the 11th of May last, it was resolved unanimously to bring the subject under the immediate notice of the Home Government. The illicit behaviour of certain Australian merchants and planters in the matter of procuring labour from the South Sea Islands, led to the passing of the Kidnapping Act of 1872, and although that measure may have been called for by practices which must be condemned, its operation has been harsh and unequal, and has, it is said, seriously interfered with the legitimate trade between Australia and the islands in those articles such as pearl-shell, tortoise-shell, and bêche de mer, for the collection of which native labour is required. Apart from political considerations connected with the French occupation of New Caledonia, and the American occupation of Navigators' group, and the future route from Australia to America, which will probably pass those islands, the annexation of Fiji had much to recommend it as an easy mode of obtaining possession of a fertile and productive group, with a large population, and resources capable of indefinite and splendid development. The islands once annexed to the British Crown, the Fijians once placed in the position of British subjects, there would, of course, be an end to all incentive to kidnapping, and the islanders would be as free to enter into labour contracts with the planters and farmers of Australia as the natives of British India with the planters of Mauritius of Jamaica or of British Guiana. This is, no doubt, the main secret of the popularity of the scheme which Sir Hercules Robinson has conducted to so successful an issue, and the prospect of opening up an additional supply of tropical labour, has imparted life and energy to the movement for annexing New Guinea. Of that island, although only separated from the Australian continent by a strait of some seventy-eight miles in breadth, comparatively little is known; and the recent visits of H.M.S. *Basilisk* and *Challenger*, although valuable in their results so far as they go, have not added much to that knowledge either as regards the inhabitants, the climate, or the resources of the country. Papua, or New Guinea, has been known to geographers for the past four centuries as a vast island, extending from the equator nine degrees south, and occupying some twenty degrees of longitude; and the Dutch, in that spirit

of appropriation which brought the greater portion of the Eastern Archipelago under the Dutch flag, have long since included one-half of New Guinea in the Netherlands East Indies. But although they have a few small trading-stations along the north and north-western shores, and a few of the products of this part of the island may be seen at the bazaars at Surinam, Amboyna, and Batavia, they have never penetrated the interior, or afforded to the world any useful information respecting New Guinea, its population, or resources. The visit of the *Basilisk*, in the latter part of 1872 and beginning of 1873, was due to an accidental circumstance, and was confined to a comparatively small portion of the island lying to the southward and eastward. The *Basilisk*, under the command of Captain J. Moresby, had been engaged in the suppression of the illegal employment of South Sea natives by the pearl fishers of Torres Straits, and, having some time to spare, it occurred to Captain Moresby to endeavour to complete the survey of the south coast of New Guinea, which had been partially performed by Captain Owen Stanley some twenty-five years previously. Captain Stanley had come to the conclusion that the south-eastern extremity of New Guinea, lying opposite the north-eastern extremity of Australia, was a wedged-shaped peninsula, traversed by a cordillera, to which he gave the name of Stanley's Range. Captain Moresby has demonstrated that what Captain Stanley mistook for a peninsula is a promontory, terminating in a fork, and separated from an island at its extremity by a wide, safe, and navigable channel. To this channel the name of "China Straits" was given by Captain Moresby. "I am strongly of opinion," says that officer, in a paper relating to the cruise of the *Basilisk*, read before the Royal Geographical Society in November last, "that the route between China and Australia will eventually lead through China Straits, which are free from danger, and have safe anchorage everywhere. A ship leaving Sydney would follow the outside route to the Great North-East Channel, a clear free sea, from that well-known track, leading to the China Straits; thence to East Cape is a clear run. There the *Basilisk* was brought up by reefs. Unfortunately, a want of stores and fuel prevented our looking for a passage, which will undoubtedly be found to the south of Lydis Island."

So much for the discovery of this new channel. "I examined," adds Captain Moresby, "the northern shores of New Guinea for about twenty-five miles in my boat. Once round East Cape, New Guinea is by a grand, clear, reefless sea; a ship might literally sail with her sides rubbing against the coral wall which binds the shore, and find good anchorage in any of the bays where a beach is seen. How far to the westward this description would apply remains to be proved; it is an important matter, and well worth early investigation."

It is to be regretted that the work which Captain Moresby was compelled to abandon was not taken up and pursued by Captain Thompson in H.M.S. *Challenger*. In February last the *Challenger* visited Humboldt Bay on the north shore, and having examined cursorily that portion of the coast of New Guinea, Captain Thompson sailed for the adjacent group of the Admiralty Islands, to endeavour to ascertain something respecting their character and that of their inhabitants, which the navigators Schonten, Corterat, and D'Entrecasteau, who visited these islands in 1616 and 1792, had failed to obtain, and thence to Yokohama. Had the *Challenger* investigated the north shore to the point where Captain Moresby terminated his running survey, much valuable information would have been collected respecting the navigation of those seas. The results of these recent visits to New Guinea have thrown considerable light upon the products of the islands, and some also upon the character of the inhabitants. As regards the latter, although in some respects inoffensive and open to dealing in the shape of barter, there is evidence that cannibalism is by no means extinct amongst them, and the people of the *Challenger* are under the impression that natives of the Admiralty Islands feed upon their dead. There was no positive proof of this hideous practice being general, but the tendency of the information obtained was to show that it exists. It should be stated that between the black and the coffee-coloured races of Papuans there is a marked difference. The former are fierce and intractable, the latter genial and easily dealt with—shy and suspicious at first, like all savages—but on better acquaintance friendly and even kindly. “Of the beauty and fertility of these islands and shores of New Guinea,” to quote once more from Captain Moresby, “it is impossible to speak too highly. In its general features it strongly reminded me of Jamaica. The precipitous, wooded mountains are, to a considerable extent, cleared and terraced to their very summits with taro and yam plantations, in a way that even a Chinaman might envy; whilst the valleys produce cocoa-nut, sago-palm, bananas, sugar-cane, oranges, Indian corn, guavas, mammy-apples, pumpkins, and other tropical productions.”

Such is the country and such are the people whom it is sought to bring within the circuit of civilisation and under the protection of the British flag. A region lying in the immediate vicinity of our Great Southern Empire should not be suffered to remain longer in the condition of barbarism, which was its earliest, as it is its latest, condition, without an effort to bring its people within the influences of civilisation. According to the most reliable reports of the resources of New Guinea, and of the character of the inhabitants, such an effort would not be made in vain. There are the elements of much material wealth in the great island; while the tribes who inhabit it—savages though they be in their existing condition—are not more savage than were the natives of Australia seventy

years ago. With the rapidly extending industry of our Southern Colonies, the want of labour is felt—and especially tropical labour—more, perhaps, than anything else. There can be little doubt that a better acquaintance with New Guinea would help to supply this want, and gradually to introduce into Australia the riches of a vast tropical region which are now produced in profitless abundance. An expedition to explore the interior of New Guinea has just been fitted out in Sydney. On the result of this enterprise much will depend. If it succeeds, and justifies the reports which have already been received respecting the climate, the people, and the resources of the island, it will be followed by further enterprises in the same direction until the information is complete, and the demand for annexation is fortified by unanswerable arguments.

“NAVAL SCIENCE” (A QUARTERLY MAGAZINE).—We are very sorry to have to record that this valuable magazine has ceased to exist. When it came into existence, in 1872, we held out a friendly hand and wished it success. We can only now express regret at its decease. During its existence of three years and three months, we have had an occasional difference of opinion with it; but we experience great satisfaction in remembering that, though good hard words have passed between us, neither side can accuse the other of unfairness or irrelevancy. We always endeavour when hitting hard to hit fair, and to avoid personalities; and it is a matter of regret that we have lost, as it was a matter of satisfaction that we possessed, a rival with whom there was pleasure even in joining issue.

ARCTIC EXPEDITION OF 1875.—*Apropòs* of the Arctic Expedition which two months ago left our shores, we have received a reprint of two addresses or lectures delivered in 1868 and 1872 by Captain Silas Bent, of the United States, before the St. Louis Mercantile Library Association, and termed respectively the “Thermometric Gateways to the Pole and Surface Current of the Ocean,” and the “Thermal Paths to the Pole,” in which it is argued that the Gulf Stream in the Atlantic and the Kuro-Siwo of the Pacific flowing north cause two passages towards the pole, and joining, produce the *supposed* open Polar Sea. Although we cannot quite agree with the whole line of argument suggested by Captain Bent, we have read the pamphlet with much interest, and can only hope that Captain Nares will find, if he succeeds in getting through Smith Sound and Kennedy Channel, the state of things as depicted in the circum-polar map attached to Captain Bent's work. The results of the voyage of the *Challenger*, in respect to the deep temperatures of the ocean, will greatly help Captain Bent in a further consideration of the subject.

THE EXHIBITION OF NAVAL MODELS AT GREENWICH.

WITHIN the last year an addition has been made to the many public exhibitions of London by the opening of the Royal Naval Museum at Greenwich. The nucleus of the exhibition was the collection of models of ships, brought together by Sir Robert Seppings, who was surveyor of the Royal Navy in the early part of this century, and since added to by his successors. The models, however, for many years, were not open to the general public, and were kept in a room at the Admiralty Office, Somerset House, whence they were, in 1864, removed to the South Kensington Museum for exhibition, the collection having been enriched by numerous models made for the International Exhibitions of 1851 and 1862. While some alterations were being made in the ever-changing Museum buildings at Kensington, the models were relegated to one of the old *annexes* of the International Exhibition, and on the establishment of the Naval University at Greenwich, it was decided that they should go to Greenwich, too, in order that they should be easily accessible to the students. At Greenwich they are, on the whole, exhibited at greater advantage than before; they are located in a building which for generations has been associated with the English Navy, and are within easy reach of the classes most interested in the objects of the exhibition. It has always been considered that our Merchant Navy had a lien upon Greenwich, its claim having been substantially recognised recently by the loan of a portion of the buildings to the Merchant Seaman's Hospital, and we should be glad to see a further step taken in the same direction, by the appropriation of a section of the new museum for an exhibition of models of merchant ships, of life-saving apparatus, and of other objects of interest in connection with the Mercantile Marine. To appropriate the space, and start the collection, would, we believe, be all that is necessary. Shipowners and shipbuilders would, we feel certain, be only too glad to further the development of our merchant ships by contributing or lending objects for exhibition. To facilitate the exchange of ideas between the Royal and Mercantile Navies of England, even in this comparatively small way, could not fail to promote the best interests of both.

On the occasion of a recent visit to the Museum, we had the pleasure of the company of Mr. Charles Cramp, of the eminent firm of W Cramp and Son, shipbuilders, Philadelphia, the builders of the *Ironsides*, and several other American iron-clads; his appreciation of the very interesting sight, has still further encouraged us to recommend our professional readers, and indeed all our readers, to avail themselves of the first opportunity of inspecting the models, and also to use all their influence for the

extension of the exhibition, so that it may be representative of the entire maritime interests of Great Britain.

Our object in the present paper, however, is to describe the museum as it is. The models occupy a portion of the north-eastern block of buildings of the "College." Before the old establishment was broken up the separate rooms or wards were known by the names of celebrated naval officers or of old ships, and those names are still retained. On entering, we are directed by an attendant, who is an unmistakeable "old salt," to turn to the left into the "Anson," where facing us is a case of models of some of the oldest ships of the Navy. As we proceed we shall see the successive development of wooden ships, and so on to the ironclads which are in the last room. A remarkable ship is that which we notice first, and the two models of her and the painting on the wall near us are of special value, as conveying to us nearly all that is known of the first epoch of the British Navy. Previous to the reigns of the Tudors the connection between the Royal and Mercantile Navies was much closer than it has been since, as the owners of merchant ships often knew to their cost, when their patriotism was put to the proof by their being required to furnish ships and men for the King's wars. Naval ordnance was for the most part made up of guns of such small calibre that fishing vessels and merchant ships could carry them almost as well as ships built for the purpose. It is believed that the first ship in the Royal Navy was built in the reign of Henry VII., but the first man of war of respectable size and having more than one mast is that of which we see the model before us, the *Great Harry*, or as she was at first called, the *Henri Grace à Dieu*, laid down by order of Henry VIII. in 1512, and launched on the 13th June, 1514. Henry VIII. not only built the first large man-of-war, but also founded the first three Royal dockyards, Deptford, Woolwich, and Portsmouth, and at the close of his reign there were fifty-eight ships in the Navy of an aggregate tonnage of 12,000. Many other names of ships as we shall see are perpetuated, but there has been no second *Great Harry*. It may not be out of place for us to suggest to the sponsors of our ironclads, that one of the largest of them might with propriety bear the name of the famous monarch who was really the founder of the British Navy. The tonnage of the *Great Harry* is stated at 1,000; her precise dimensions are not known, but she is said to have been manned by 349 soldiers, 50 gunners, and 301 marines (probably sailors). There are two models of her, the larger being to a scale of about $\frac{1}{4}$ -inch to the foot, the smaller, which is full rigged, is on a scale of about $\frac{1}{8}$ th inch to the foot. We notice that she has four masts and a bowsprit, all five being square rigged. She appears also to have had two complete covered decks with ports in each for twenty-two guns. Only about a fifth of the length of the upper deck was

open ; there was a large forecastle, and a quarter-deck covered nearly half the length of the ship. Above the quarter-deck and for half its length was the poop, and in addition there were towers along the side, at intervals, for musketry. The great elevation of the ends as compared with the middle, appears to be characteristic of all the earlier war ships, and was occasioned by the great reliance which was placed upon small arms in naval warfare. The cannon were imperfectly made, often having so much windage that there was no certainty in the aim, and the gunners were at the best very indifferent artillerists. At such a time, a wall behind which men could find shelter from the fire of musketry, and having loopholes for small arms would be very useful indeed. Hence the high *castles* at the ends of the ships, one of them obviously suggesting the origin of the term *forecastle*. This peculiarity of construction, however, lingered long after the increase in the calibre and efficiency of ordnance rendered it useless, and it appears in all our large ships till within the last fifty years, as we shall see in looking over their models. In the smaller model of the *Great Harry* guns are shown at the ports ; they are not however an exact indication of the number actually carried, which appears to have varied from time to time. This is stated at 122, but it is said that only thirty-four of them could properly be called cannon, and of these less than half were not even nine-pounders. Indeed, anyone can see that a vessel with so much top-hamper could not carry many large guns without being crank, if indeed she was not unstable under the best of circumstances. The *Great Harry* was, we fear, decidedly *unseaworthy*, having a great deal too much *clear side*. We commend this fact to the notice of those among us who do not seem able to comprehend the possibility of having too much of a good thing, when that good thing is *freeboard*. History tells us that the *Great Harry*, notwithstanding her crankness, did some good service, and was ultimately burnt accidentally at Woolwich in 1558.

In the same case with the *Great Harry* is a model of another remarkable ship, the *Royal Sovereign*, named at first the *Sovereigne of the Seas*. She was built in 1637, and was designed by Mr. Peter Pett, a member of a family of naval architects, who were the constructors of the British Navy from James I. to William III. On comparing the models of the two ships, one cannot help being struck with the great improvement effected in a hundred years. The Pett family were indeed the first scientific naval architects in this country ; their ships will favourably compare with anything earlier than the present century, and indeed the type of vessel introduced by them lasted almost unaltered for one hundred and fifty years. The *Royal William*, of which there are two models in the same room, one full-rigged, representing her as originally built in 1670, and another, showing her as altered in 1692, is a better exemplification of

the ships of the seventeenth century than is the *Royal Sovereign*. The latter, indeed, as can be seen from the model, was built entirely for show. She had a low projecting knee of the head something like forty feet long, and having at its extremity an equestrian figure of the King. A smaller figure was placed on the bowsprit, just above the stem, and we notice that the square front of the forecastle, the whole sides of the ship, and the stern, were literally covered with carving, and the designer of her decorations says that "all the works were gilded quite over, and no other colour but gold and black to be seen about her." The cat-heads were supported, as we can see, by two full-length figures of men, and on the square bow between them and looking forward were six other similar figures. The twelve signs of the Zodiac were represented on the spaces between the ports of the forecastle and poop, and the ship's sides below the upper deck were covered with trophies of arms and other elaborate carvings almost to the water's edge. A large carved coat of arms occupied the whole width of the stern; and inboard, the bitt-heads round the masts were carved to represent the heads of helmeted soldiers. For gorgeousness and magnificence the *Royal Sovereign* has never been equalled, and the extravagance displayed in her construction and equipment, paid for by Charles I. out of the obnoxious ship-money, did much to increase the unpopularity of that tax. It is to be remarked that this ship was built at Woolwich, and thus the grievance caused by the tax was aggravated by the money being squandered in useless show almost under the eyes of those who most objected to it. The *Royal Sovereign* was the first ship in the English Navy with three decks; she was afterwards cut down and proved a very serviceable ship. She was destroyed by an accidental fire at Chatham in 1695. We have spoken of the model of the *Royal William* as representing the first-rate of the seventeenth century; there is also another model of a first-rate (name unknown) of the same period, and one of the *Britannia*, of 100 guns, and 1,700 tons, built at Chatham in 1682. Before passing on to the models of the eighteenth century, let us notice the earliest features of the designs of the last-named ships, which furnished the type for line-of-battle ships for nearly a century and a-half. They had considerable sheer, the effect of which was increased by the fact of there being in the after part of the ship two decks more than amid-ships. The upper gun-deck as we see covered abaft the mainmast by a quarter-deck, which is again covered from its after end to a little before the mizen, by the poop. The upper-deck is open from the mainmast to the after side of the forecastle, this portion of the ship being known as the *waist*. The forecastle as we notice nearly square, the cat-heads being placed at the angles of its fore-side. The stem has considerable rake, and has attached to it a large knee of the head, of the form usually known as the *beak-head*, and affording room for a very large figure. The reason

of these peculiarities we have already noticed in connection with ships of an earlier date ; their inconveniences are obvious, but the first step towards a flush upper-deck was not taken till the beginning of the present century, when, as we shall see in the next room, bridges, called *gangboards*, were thrown across the *waist* close into the side in order to save the descent from the quarter-deck and the ascent to the fore-castle. It also became usual to stow spars in a fore-and-aft direction between the quarter-deck and fore-castle, and at last the interval was bridged over completely, flats being laid at the side for *gangways*, a flat amidships for the spars, and the open spaces between covered with a continuous row of waist gratings. The upper-deck of a line-of-battle ship was then spoken of as the *fore-castle*, *gangways*, and *quarter-deck*, and at last as the *spar-deck*, and hence we have the origin of a term which has been applied to merchant ships, has crept into the tonnage acts, and caused all sorts of confusion. Its original meaning was a deck of light construction for parts of its length, in some places consisting merely of a row of gratings without the coamings of a properly-formed hatchway.

Before leaving No. 1 room, let us notice the large fully-rigged model of the *Queen*, one of the last sailing first-rates. It is a very fine model on a half-inch scale—that is, double the usual size, and is shown in a dock. We also observe that half-block models are hung round the walls. There are two of foreign ships, the *Commerce de Marseilles*, a French vessel of 120 guns, captured at Toulon, in 1793, and the *Salvador del Mundi*, of 112 guns, captured from the Spaniards in 1797. They are both much superior ships to our men-of-war of the same date ; indeed, in the early part of the long war with France, naval victories were won entirely as a consequence of the ability and bravery of the British seamen and officers, the ships of the enemy being in every respect far superior to our own. The reason of this was that, in the early part of the eighteenth century, the Navy Board laid down a scale of dimensions and tonnage for vessels of each class from which no deviation was permitted, whatever service the ship was intended for. We can hardly wonder at the consequences. When considerations other than capability for performing certain work enter into the design of a ship, evil must result, and the skill and ingenuity of the naval architect are of little use if he is hampered at every point by arbitrary restrictions. In the history of our Royal Navy there was scarcely any progress for a hundred and fifty years, and at last improved designs were copied from captured ships. This was while the designers had to work in fetters. Let us take warning, and stoutly resist, as indeed this journal has always done, all attempts to impose hampering restrictions upon the builders of our merchant ships. The past clearly teaches us that to ensure a good ship, the naval architect must be free from all considerations of evading either tonnage laws or rules of freeboard.

The second room bears the name "Edinburgh." We notice in it, among other models of our old sailing ships, the *Caledonia*, of 120 guns, launched in 1808, interesting as being the last hospital ship—*Dreadnought*. She was appropriated for this purpose in 1856, when she took the name of the old ship, replaced by her. There are also a few other famous ships: the first *Victory*, built in 1737, and lost seven years after in the English Channel, with her Admiral and crew of 1,000 men; the famous *Royal George*, of which the poet sang—

"It was not in the battle—
No tempest gave the shock;
She sprang no fatal leak;
She ran upon no rock!

A land breeze shook the shrouds
And she was overset;
Down went the *Royal George*,
With all her crew complete."

She went down in 1782; fifty-seven years after, her guns and stores were recovered, and the ship was blown to pieces, when much of her timber floated. The old timber has been greatly sought after, and treasured by our seafaring population, and innumerable snuff-boxes and walking-sticks have been made of pieces of the *Royal George*—doubtless all genuine. In this room there is a model of Nelson's *Victory*, on a launching-cradle, and another model in the same position of a specimen of the old sailing frigate the *Diana*, of 38 guns, built in 1794. The difference between her lines and those of the first and second-rates of the same period will explain the efficiency and consequent popularity of the old frigate. In the *Diana* we notice the incomplete upper-deck as described in the case of line-of-battle ships. On the walls there are a large number of half-models of frigates captured from the French and Spaniards. The restrictions, as to the dimensions and tonnage of ships, were not got rid of finally till 1831, and the result is shown in the splendid line-of-battle ships and frigates built since that date. They, however, are now obsolete as fighting ships; a number of them are still kept as guard-ships, but in a few years their race will only be represented by the models in the Royal Naval Museum. We notice a full model of one of the last of the first-rates, the *Royal Albert*, launched and named at Woolwich, in 1854, by Her Majesty Queen Victoria. The *Royal Albert*, like many others of our last line-of-battle ships and frigates, was designed for a sailing ship, but altered to a screw-steamer on the slip, previous to launching. The *Howe*, in the same room, represents one of the very few first-rates designed as a steamer. She was the largest ship of the old wooden Navy, being 260 ft. long, 61 ft. 1 in. broad, and 4,245 tons builders measurement. She was launched at Pembroke, in 1860. Her

armament consisted of 121 guns, only one of which was over 65 cwt., and she carried 1,130 men. Some fine specimens of modern frigates are shown in whole and half-models; a very handsome one is that of the *Immortalité*.

On going up-stairs, we enter first the relic-room, to which have been removed the interesting objects which were formerly exhibited in the Painted Hall, in another part of the College, but now form part of the Museum. Nelson's uniform, worn by him at the Nile and Trafalgar, and the relics of the Franklin expedition, are deservedly objects of great attraction to all visitors; and in the same room is appropriately placed a full-rigged model of Nelson's *Victory*. The original is still preserved, and does duty as guard-ship at Portsmouth. She was built at Chatham, and launched in 1765. The model is on a scale of $\frac{1}{10}$ th inch to the foot.

If our readers wish to complete their study of the old wooden ships, they will pass on to the room on the first floor, containing the structural models of wooden ships. Here are seen illustrations of the old system of construction of our men-of-war—a system virtually adopted, with bad results, in the construction of many wooden merchant ships of the present day. The whole of the material of which the ship is composed is arranged either fore and aft, or at right angles to the keel. This arrangement has often been compared to a gate, made up merely of upright posts and longitudinal bars, which, as everyone knows, would not retain its shape for long. So the old ships of our Navy were constantly exhibiting signs of weakness, usually shown by the dropping down of the ends. To obviate this, and to obtain a structure in which all the material should be disposed to the best advantage, Sir Robert Seppings, in 1814, introduced the truss and rider system of construction, which was, in fact, the same thing as putting a diagonal tie to the gate. A model of a first-rate shows the old and new systems. There is also a model showing a still more advantageous distribution of material adopted when strength and lightness are the chief considerations of the design. There are three thicknesses of planking, one fore-and-aft, one athwartships, and one worked diagonally. This system has been advantageously used in the construction of yachts and despatch vessels, but does give the local strength and firmness necessary for working heavy guns, is very expensive, and increases materially the cost of repairs. The *Osborne*, *Victoria*, and *Albert*, and *Helicon*, of which whole models are in this collection, were built upon the diagonal, or, as it is sometimes familiarly called, the lath-and-plaster system of building.

We have not space to notice the many interesting models of parts of wooden ships, but would recommend our readers if they should visit the Museum to give them some attention. The various methods of

connecting the deck-beams with the ship's side will have a special interest for our professional readers. There are also many excellent models of bows and sterns of ships, and of the framing of the bow and stern. In a room on the second floor is a large model showing the stations of the ships at the battle of Trafalgar. This, we believe, has been added to the collection since its removal to Greenwich. Another room, on the same floor, is occupied with specimens of the woods used in shipbuilding. At Kensington, we remember to have seen some interesting specimens, showing the effects of the *teredo*, &c., upon wood; we believe they are to be exhibited at Greenwich when the collection is completed.

We have in this paper noticed the part of the Museum having reference to the Navy of the past; we must reserve for another number an account of the illustrations of our present Navy. Owing to the rapid changes and developments of our war ships, there is fully as much to notice in the models of the last twenty years as in those which we have already described.

(*To be continued.*)

MORTARS AND ROCKETS FOR COMMUNICATING WITH WRECKED VESSELS.

To the Editor of the "Nautical Magazine."



SIR,—I really must ask permission to say a word or two on this subject with special reference to your leading article of last month, and on Mr. Dillon's letter. The fact is that neither Mr. Dillon nor Mr. Rogers is the *inventor*, if one may use the term, of the idea of throwing a double line over a wreck, and Mr. Rogers is certainly not the inventor of the "expanding anchor" and grapnel-shot idea. I find on reference to the report of the "Lifeboat Committee," published in 1851, of which I have a copy, "presented by the Duke of Northumberland," that the "expanding anchors," "the grapnel-shot," and a "double line proposal" are all reported on in its pages and were not new then. As regards the "double line" proposal, I find these words in Captain Jerningham's report, "In case where the wreck is close, two lines can be fired attached to a *cylindrical* shot, with 16 oz. of powder. The communication being effected, by cutting the lines on board, they may be rove (knotted or spliced) through a block, establishing a whip at once." Captain Jerningham also says,

"In connection with the subject of saving life from shipwreck, I have the honour to enclose a rough sketch of an anchor-shot, which, after many anxious experiments, I can recommend as capable of standing the discharge of 10 oz. powder from a $5\frac{1}{2}$ -inch mortar taking out a rope of $1\frac{1}{2}$ -inch 210 yards in moderate weather, and 150 yards in a gale of wind." This proposal was made for hauling off lifeboats from the shore.

In the *Lifeboat Journal* for 1852, I find the following remarks:—

"On such occasions (the launching of the lifeboat) the anchor-shot proposed by Captain Jertingham, R.N., and the grapnel-shot by Mr. Duffield Offord, of Great Yarmouth, may be found very useful. Of the latter, a full-sized specimen was shown at the Great Exhibition.

"The characteristic feature of both the anchor and the grapnel-shot is, that the flukes are made moveable at the crown (which is oval in the grapnel and rather more cylindrical in the anchor), and close up when inserted in the mortar: each weighs about 45 lbs., and is fitted to be fired from the usual $5\frac{1}{2}$ -inch mortar supplied to the Coastguard. The anchor has, as usual, a stock; also a small clip, which falls over the points of the flukes when shut, to secure them close to the shank, and falls off when fired. The grapnel has *five flukes, no stock, no clip*, but a sort of latch loaded at one end, which shuts up *into the shank until fired*, when it falls across, and prevents the flukes from closing. The length of the shank in each case is about 30 inches, and either could be made for about £3.

"In January, and again on the 7th February, 1846 (as it appears from the *Norfolk News*), the shot was tried on the beach in the presence of Captain Manby, and many persons, and gave great satisfaction. In March, 1846, both it and the anchor-shot were tried at Woolwich, in the presence of Colonel Dundas, R.A., and others, and were successful.

"As while lying on the beach sand is likely to get into the *hinges* of the grapnel-shot, it is advisable to dip it once or twice into a bucket of clean water just before placing it in the mortar; with this simple precaution there is no fear of the flukes not opening out.

"The shots were in each case fired from the same sized $5\frac{1}{2}$ -inch mortars, laid at 30° elevation, with the same charge of powder, the same 2-inch Manilla line, and by the Coastguard; at Shields under charge of Mr. Miller, Chief Officer, and at Grimsby under Inspecting-Commander Power and Lieutenant Hay, R.N."

Since then science and long experience have been brought to bear on the subject, resulting in the present plan of carriage used by the boats of the National Lifeboat Institution, which answers every purpose and enables the lifeboats, with their crews on board, to be readily launched through a high surf. So that the expanding anchor of Captain Jertingham is not necessary.

I find on reference to the Parliamentary paper, No. 238, 1873, where a picture of the projectile—tri-fluked—expanding anchor of Mr. Rogers is given, that the three arms are intended to answer the purpose of the five arms of the grapnels of Mr. Duffield Offord; that the three arms or flukes of the expanding anchor of Mr. Rogers shut on to the stock as did the two or five arms or flukes respectively of the anchor-shot of Captain Jerningham, or the grapnel-shot of Mr. Duffield Offord. I find also that the tri-fluked-expanding anchor of Mr. Rogers as there pictured has no stock, and that the absence of the stock was one of the novelties claimed in 1846 of the five-fluked-expanding grapnel of Mr. Duffield Offord. I find also that the “five-fluked-expanding grapnel-shot,” weighing about 45 lbs., with a 2-inch Manilla line attached, when fired from a 5½-inch cohorn, had a range of 170 yards in 1851, as certified by Captain Power, R.N., and Lieutenant Hay, R.N. I also find that the “projectile-tri-fluked anchor” of Mr. Rogers, weighing 128 lbs., when fired from an 8-inch mortar weighing 9 cwt., with a rove rocket line—that is, 1-inch line attached, obtained a range of 120 yards. I find these facts are certified under the hand of “T. Elwyn, Colonel-Commandant and Superintendent.”

It appears to me that the projectile—tri-fluked—anchor of Mr. Rogers is the same in principle as the five-fluked expanding grapnel of Mr. Duffield Offord—that is to say, it is an anchor, or grapnel, with expanding arms, three or five (as the case may be), and no stock. What appears to be new in the arrangement made by Mr. Rogers, is “an expanding block,” whereby a line, having kinks and knots in it, will pass through, and a mechanical detail for opening the arms, by means of a wire passed up the shank, instead of the “loaded latch” of Mr. Duffield Offord.

My object in writing to you is to confirm your statement that every trial has been given to these proposals, and to point out that they have been before the public, not fifteen years as you allege, but thirty years.

Yours, &c.,

AN OLD CONTRIBUTOR.

THE INTERNATIONAL CONFERENCE ON MARITIME METEOROLOGY.

THE report of this meeting, which was held in London in the first week of September last, has appeared in the month of April, and so we may now fairly consider what has been the tendency of the action taken thereat, and what promise it holds out for the future prosecution of the science of maritime meteorology.

It is hardly necessary to remind our readers that of all the nations which took part in the Brussels Conference in 1853, only three—the United States, Holland, and this country—have really worked at ocean meteorology since that date. Germany did not put in an appearance at Brussels at all, but of late years some high-class work, bearing on the meteorology of the North Atlantic, has been turned out by the Nord-deutsche Seewarte at Hamburg, under the direction of Herr von Freeden. Some years ago Dr. Neumayer published some results of his discussions of observations taken in the South Indian Ocean, when he was at the head of the Flagstaff Observatory, Melbourne, and more recently Mr. Meldrum also has dealt with the meteorology of the western part of the same ocean, but of course these works, hailing from British Colonies, count to the score of this country.

Ever since the idea of these international conferences has been broached, in 1872, the wish has been expressed in several quarters to have another Maritime Conference, to reconsider the resolutions adopted at Brussels, now that the nautical world has had twenty years experience of their operation; and at the Vienna Meteorological Congress in 1873 it was resolved that the arrangements for holding such a meeting should be entrusted to a committee consisting of the following five members:—Professor Buys Ballot, Holland; Professor Mohn, Norway; Captain Mouchez, France; Dr. Neumayer, Germany; Mr. R. H. Scott, England.

After considerable discussion, it was decided that the meeting should have an unofficial character, and it was actually held at the Meteorological Office in London.

The Conference was attended by the following gentlemen:—Austria: R. Müller, Director of the I. R. Hydrographic Office, Pola. Belgium: F. van Rysselberghe, Professor at Navigation School, Ostend. Bengal: H. F. Blanford, Secretary of the Meteorological Committee, Calcutta. China: J. D. Campbell, Inspectorate General of Chinese Maritime Customs, London. Denmark: Captain N. Hoffmeyer, Director of the Royal Danish Meteorological Institute, Copenhagen. France: A. Delamarche, Ingenieur Hydrographique, Minister de la Marine, Paris; C. Sainte Claire

Deville, Inspector of French Meteorological Stations, Paris. Germany: W. von Freeden, Director "Deutsche Seewarte," Hamburg; H. A. Meyer, Commission for Investigating German Seas, Kiel; G. Neumayer, Hydrographer, Berlin; Captain Stempel, Imperial Navy. Great Britain: R. J. Mann, M.D., President, Meteorological Society, London; Admiral Nolloth, Representative of the Admiralty; R. H. Scott, F.R.S., Director, Meteorological Office; Captain H. Toynbee, Marine Superintendent, Meteorological Office, Representative of the Board of Trade. Holland: C. H. D. Buys Ballot, Director of the Royal Meteorological Institute of the Netherlands, Utrecht; Lieutenant J. E. Cornelissen, Royal Dutch Navy, Marine Superintendent, Utrecht. Italy: Captain N. Canevaro, Naval Attaché to the Royal Italian Legation, London. Norway: H. Mohn, Director of the Royal Meteorological Institute, Christiania. Portugal: J. C. de Brito Capello, Director of Nautical and Meteorological Observations, Polytechnic School, Lisbon. Russia: A. Moritz, Director of the Observatory, Tiflis; Captain M. Rikatcheff, Central Physical Observatory, St. Petersburg. Spain: Captain M. Montojo, Spanish Navy; Captain C. Pujazon, Director of Marine Observatory, San Fernando.

Professor Buys Ballot was elected chairman, and Captain Hoffmeyer with Mr. Scott acted as secretaries.

The following is the list of questions proposed in the programme, with the resolutions to which they respectively gave rise:—

Resolved—"That there should be one form of meteorological register for the navies and merchant services, and that those who cannot fill the log should keep part of it."

I.—OBSERVATIONS.

Columns 1 to 6.*—*Date and Position of the Observations.*

Is it your opinion that a fresh column should be added headed "Course and distance by the log in every watch of four hours?"—An additional column should be given in the log for "course and distance." The course should be expressed in degrees, and not in points. The question of hours, 4-hourly periods, as proposed by Captain Toynbee, should be adopted.

Columns 7 and 8.—*Currents.*

Observations on "the direction and rate" of currents to be transferred to the column for remarks.

Column 9.—*Magnetic Variation.*

Is it desirable to give an additional column for the "direction of ship's head?"—An additional column to be given in the log for the direction

* The numbers of the columns refer to the Brussels abstract log.

of the ship's head, and the amount of heel to port or starboard. The total compass-error and not variation only to be given. The conference expresses its opinion that the lettering on the English compass should be adopted by all nations for meteorological purposes.

Columns 10 and 11.—*Wind Direction and Force.*

Is it possible to employ an anemometer at sea, so as to give trustworthy results?—A decided answer to this question cannot at present be given, but it is desirable that various anemometers should be tested by special ships, and that a special form of four extra columns should be prepared for the purpose of recording such observations.

Can the use of the Beaufort scale be made universal?—The use of the Beaufort scale should be continued, with the addition of the amount of sail which Beaufort's ship would have carried had she been rigged with double topsails. Also the direction and force of the wind should be recorded at the *time* of observation, and not estimated for a certain number of previous hours. Also, they should be recorded every two hours.

Columns 12 and 13.—*Barometer.*

To what degree of minuteness is it necessary to observe this instrument?—To one-hundredth of an inch at sea, or its equivalent in the metric scale.

Columns 14 and 15.—*Thermometers, Dry Bulb and Wet Bulb.*

Should these observations be required from all ships?—Wet and dry bulb observations are desirable, and should be obtained whenever possible.

Column 16.—*Forms and Direction of Clouds.*

Is this column sufficient, or should any notice be taken of more than one stratum of clouds?—The upper and lower clouds should be recorded in separate columns, and the direction from which *upper* clouds come should be recorded when possible.

Column 17.—*Proportion of Sky clear.*

Is it not advisable to substitute for this heading "Proportion of sky clouded?"—It is preferable to give the proportion of sky clouded instead of the entry "proportion of sky clear," as recommended by the Brussels Conference.

Column 18.—*Hours of Rain, Fog, Snow, &c.*

Is it desirable to retain this heading, or to substitute for it and No. 28 a column headed "Weather by Beaufort Notation?"—It is desirable to retain this heading, but that the use of Beaufort's Notation may be continued by those accustomed to it.

Column 19.—*State of the Sea.*

Should this be given according to a numerical scale?—A numerical scale (0—9) should be adopted, and an extra column should be given to the observation. The direction of the sea swell, or the different swells, to be given in the original column.

Columns 20 to 22.—*Temperature of Sea Surface, Specific Gravity, Temperature at Depths.*

Is it desirable to retain these columns, or can the observations when taken be inserted in the column for "remarks?"—The first two columns should be retained. Sea temperatures at depths should not be required from all ships, and should be recorded in the "Remarks."

Column 23.—*Weather.*

Vide the resolution on column 18.

Column 24.—*Remarks.*

The "Remarks" as asked for by the Brussels Conference should be adopted, with the exception of the observations of temperature with coloured bulbs at sea.

II.—INSTRUMENTS.

What patterns of instruments should be employed for any observations which may require them?—The question of the precise pattern of instruments is not of very great importance, so long as they satisfy the tests applied at the several central institutions and are compared with standard instruments; but it is recommended that they shall be of a pattern as easy as possible for reading.

Is there any reasonable possibility of introducing the metric and centigrade systems for general use at sea?—The recommendation respecting the use of the metric and centigrade systems as expressed at the Vienna Congress was approved, and it was recommended that a table of conversion should be entered in each log to enable captains to compare barometers which have different scales.

III.—INSTRUCTIONS.

Is it possible to devise a general form of instructions to ensure uniformity in regard to methods of observation and registration?—The instructions should be suited to the log now proposed by the conference, but modified to meet the various requirements of different nations.

The conference requested that Captain Toynbee's proposed form of log should be lithographed and the English "instructions" printed for circulation amongst its members.

IV.—OBSERVERS.

What control should be exercised over the observers as to their instruments and registers?—It is necessary that all instruments used should be compared with standard instruments, either at the central or the filial institutions (if such exist), before and after the voyage; and that the corrections and date, &c., of the comparison should be entered in the log.

Is it desirable that all instruments employed should be the property of the central establishment, and *lent* to the observers?—It is desirable that the instruments should be the property of the central office. It is necessary that a careful examination should be made into the quality of the observations recorded, and that the attention of the observers should be specially directed to any errors which may have been detected.

V.—CO-OPERATION OF THE ROYAL NAVY.

To what extent can ships of war assist in forwarding the ends of the meteorological inquiry?—The Royal Navy can furnish more complete observations than are possible on board merchant ships, as, *e.g.*, Deep-sea soundings and temperatures. Observations in unfrequented parts of the sea. Special experiments. It is most desirable that the duty of observing should be intrusted to some responsible officer. It is, therefore, resolved that the authorities of the Navies shall be requested to continue to give such assistance to the prosecution of meteorological science as circumstances shall permit.

A Report was handed in, which had been drawn up by a number of the members who were in the Naval Services of some of the countries represented, and it was decided that the following resolutions, which it contained, should be adopted in lieu of those given above :—

1. “ It is very important that the organisation of meteorological inquiry, as regards the Navies of all countries, should be arranged in accordance with the principles and stipulations laid down by the Conference for Marine Meteorology generally; and it is further important that the results of all observations made on board ships of war in any country should be rendered accessible for discussion by the central station for Maritime Meteorology in that country without prejudice to any subsequent publication by the respective Naval authorities.

2. “ The Conference, while admitting that the introduction of measures calculated to improve the condition of meteorological inquiries in the Navy must be left to the authorities of the respective Navies, is, nevertheless, of opinion that all care should be taken to secure uniformity as to mode of observation, and especially to provide for the comparison of all instruments used with the respective standard instruments of the Central Institutes.

3. "The Conference considers it to be its duty to request that those entrusted with the management of scientific affairs on board men-of-war will lend their strenuous support in securing from the Naval authorities in each country such regulations as will place meteorological inquiry on board such ships in as favourable a position as may be deemed consistent with the execution of the ordinary duties of the service, and will also induce the commanders to render to such inquiries all the assistance and furtherance in their power. The Conference, knowing that such regulations must be framed according to the requirements of each country, expresses, nevertheless, its opinion that, inasmuch as meteorological observations require considerable experience, they should be entrusted to experienced officers on board suitable vessels.

4. "Although the Conference is of opinion that, as far as the general scope of meteorological inquiry goes, the same form of register should be supplied to merchant ships as to men-of war, it declares it will be most desirable that, besides the regular observations, a more extended scale for scientific inquiry should be adopted on board ships of war, as in such cases there is a large number of suitable officers, as well as more means for carrying on the service. As examples of observations which are of importance for the development of Maritime Meteorology, over and above the regulations embodied in the scientific instructions given to naval expeditions for the special purpose of the advancement of science, the following suggestions may be enumerated:—

(a) "Possibility of carrying out accurate observations on the velocity of the wind by anemometers at sea.

(b) "Possibility of employing rain-gauges satisfactorily at sea.

(c) "Observations with Regnault's and other hygrometers, and experiments on the best mode of observing wet and dry thermometers, and the best position to place them in on board ship.

(d) "Currents at the surface and at depths to be observed with great minuteness, with the special object of defining their limits.

(e) "The comparison of various instruments, among which are expressly mentioned that of aneroids with mercurial barometers. It is further deemed very desirable that frequent comparisons should be instituted between the instruments used at sea and meteorological stations on shore in various countries.

(f) "Deep-sea soundings and temperatures, with specimens of water.

(g) "The collecting of information on Ocean Meteorology at outlying stations.

(h) "The furnishing of synchronous observations at Oh. 43m. G. M. T., in accordance with the suggestion and request of the United States Signal Office."

VI.—DISCUSSION.

Can general suggestions be thrown out as to the most profitable mode of discussing the observations?—It is desirable that every institution should publish the observations and results in such a manner that every foreign institute can incorporate them with its own observations and results in the easiest way possible; that is, by preserving the number of observations, together with any means derived from them, for single square degrees. It is further desirable that, whatever charts be published, the results for single square degrees should be published in a tabular form. It seems desirable for the use of the sailor that each chart should have reference to only one element, or, at least, only to elements closely related to each other.

VII.—SUBJECTS OF INQUIRY.

To what extent can a division of labour, as regards subjects of inquiry, be carried out in a spirit of fairness to the collecting and discussing establishments respectively?—The division of labour, as regards investigations, can only be carried out by mutual agreement between the several institutions; and each institution should announce to other institutions what investigations it proposes to undertake. It is very desirable that such division of labour should be effected.

VIII.—SAILING DIRECTIONS.

In how far are purely practical investigations, such as the preparation of sailing directions, admissible for a scientific institution?—The sailor wants the result of experience alone, and he must receive assurance that his observations have been turned to use. When these results of experience have been given, the theorist may point out the reason why certain routes are the best.

It was resolved that Captain Toynbee's remarks on the programme should be printed in full, with extracts from the remarks of other gentlemen, should they contain important suggestions.

If we review these resolutions, and compare them with the decisions taken at Brussels, we find that there is hardly any difference between the two courses of action proposed, and that difference, so far from tending to render the work of keeping a meteorological log less, has somewhat increased it by calling for the entry of "True Course and Distance by Log every four hours." It is hoped that captains will not find the insertion of this information too serious an addition to their self-imposed services in the cause of meteorology, for the facts so supplied are of great value in the estimation of the actual way made by the ship, inasmuch as in working to windward the mere entry of her position daily at noon gives but little clue to her position at the four hourly periods.

In one respect we, in this country, have good reason to be satisfied with the results of the Conference, for by the unanimous vote of its members it was resolved that the form of log and instructions drafted by Captain Toynbee should be embodied in the Report, and submitted for general approval. This log differs in some respects from the Brussels Abstract Log, but is almost identical with that devised by Admiral Fitzroy for the use of the Meteorological Department of the Board of Trade, from the very first, so that we may fairly claim for the views of that officer, originally considered rather too advanced, that they have stood the test of time and have met with general approbation, if not entire adoption.

This last word brings us to the root of the whole matter. Why do we say, "if not adoption?" It is now twenty-two years since the Brussels Conference, and we have already seen how little, comparatively speaking, has been done by most of the nations which put in an appearance thereat, to carry out the undertakings of their representatives in the way of prosecution of ocean meteorology. What prospect have we of better results *as to general co-operation* for the future? It must be confessed that they are not great, and that the brunt of the battle will have to be borne, as heretofore, by Holland and this country, inasmuch as the United States have devoted most of their energies to their own signal office and its exclusively land work.

The Naval Observatory at Washington has, however, issued a new form of log for the use of the United States Navy, and is turning its attention to the revision of Maury's Charts.

The fact is that although, in most European countries there are individual men who have done good work in some lines of enquiry connected with Marine Meteorology, their Governments will not found offices for the collection and discussion of observations, even if the nation itself possesses a Navy, Royal or Mercantile, of sufficient magnitude to yield materials in such quantity as to repay discussion. Such establishments are costly, as in addition to the clerical staff for discussing the observations, a considerable outlay is required for laying in a stock of instruments and providing means for their verification; and we learn that one at least of the prominent maritime nations has finally decided not to incur such an expenditure.

For the benefit of our non-scientific readers, we may here reproduce an extract from the account of the Conference presented to the Meteorological Society, by Dr. Mann, F.R.A.S., their President:—

"In reference to actual work at sea, it was held that the vessel's course should be expressed in degrees of the circle, rather than in points of the compass, and that records of it should be recorded every four hours; that the entire errors of the compass, and not variation only, should be noticed; that the direction of the ship's head, and the vertical heeling of the vessel, should be marked; and that the lettering of the English com-

pass should be universally employed. It was also recommended that the force and direction of the wind should be carefully recorded at two hours' interval; that the Beaufort's scale of estimation should be used; that the barometer should be read to hundredths of an inch, either in decimals of an inch, or in some other suitable equivalent; that the proportion of clouded sky, rather than of clear sky, should be registered; that the occurrence of rain, fog, and snow should be marked in Beaufort's notation; and that the magnitude of sea waves should be given in a numerical scale, and the direction of swell indicated.

"It was further suggested that wet and dry bulb thermometrical observations, descriptions of the form of the clouds, the movement of upper cloud strata, and the temperature of the lower depths of the ocean, should be recorded, whenever it was found practicable to do so;—but that these more delicate and difficult observations should not be held to be indispensable. It was also thought that various forms of anemometer should be tried at sea, with a view to determine whether this instrument could be advantageously employed on ship board.

"It was unanimously agreed that instruments employed by sailors aboard ship should be of the simplest construction compatible with efficient record, but that they should invariably be of some form accepted and approved by a competent and responsible authority, and that they should always have been compared with established standards, and have had the comparisons registered, the graduation being according to the centigrade scale, and a table to facilitate the conversion of this into other scales being attached to the log-book. This recommendation was in accordance with the resolution of the Vienna Congress, as to the use of the metric scale; but, of course, there is no intention of adopting the metric scale in this country. It was thought advisable that all instruments should be the property of the Central Office of Superintendence, and that all observations should be methodically checked and supervised. It was also arranged that the English authorised code of instructions for observers should be provisionally issued to members of the Conference for their deliberate consideration.

"It was held to be of high practical importance that all observations should be so discussed and arranged as to admit ready comparison with each other; that results from single-degree squares should, for this reason be formally tabulated; that all charts expressing results should be confined either to single, or to closely allied elements of observation; and that, as a general rule, results only, without their correlative discussions, should be presented to sailors. It was also strongly felt that arrangements should be made between distinct and distant institutions, having the superintendence of meteorological observation, for the organisation and distribution of work.

“ Considerable attention was given to the question of how far national Navies might be turned to a better account in promoting the prosecution of maritime meteorology as a science. An elaborate, and in some sense almost exhaustive, discussion of this topic was entered upon incidentally and independently by certain members of the Conference who were connected with naval services, and the results of their deliberations were submitted to the Conference in the form of a series of definite propositions. These were carefully considered in the full meeting of Conference, and, with the reservation of the paramount necessity of all such questions being held to be fundamentally left in the hands, and at the discretion, of the authorities responsible in the several Governments for the administration of naval affairs, the views of these gentlemen were conditionally accepted and endorsed as matters that might advantageously be suggestively communicated to the authorities, with a request for such favourable consideration as could be given them. It was thus agreed that it would be well if the Navies of various nations could be brought to adopt as far as possible the principles and practice recommended by the Conference ; that the observations made in any Navy should be rendered available for comparison and discussion, by being recorded at the allied central meteorological institutions ; that the observations should be of an organised uniform character, should be derived from verified instruments, and should be intrusted to the hands of trained and experienced officers. It was also thought that a more extended range of inquiry could be undertaken on board ships of war than could be ventured upon by the commercial marine ; and that on this ground the record of the velocity of the wind at sea by anemometers—the employment of rain-gauges and hygrometers afloat—the examination of superficial and deep currents of the ocean—and the comparison of the performance of aneroid with mercurial barometers, and of sea observations with records made at neighbouring shore stations—should be kept prominently in view.

“ Deep-sea sounding, observation of the temperature and composition of the water at various depths, co-operation with the synchronous observations of the United States signal-office, and, emphatically, the extension of meteorological investigation to outlying and rarely visited regions, were marked as matters that should be continuously pressed upon the attention of the naval authorities and of naval men. A somewhat large section of the Conference, indeed, seemed to go far towards the assertion of the principle that henceforth ships of war should be exclusively used for meteorological inquiry. In deference, however, to the general practice of enlightened communities, and the state of public opinion among the most advanced and civilised nations, any decision of that question was indefinitely postponed.

“ The London Conference on Maritime Meteorology, on the whole,

presented a satisfactory and happy illustration of the advantages that may be secured from this kind of international effort. The result affords a full justification of the anticipation entertained by the Permanent Committee of the Vienna Congress when it proposed the meeting. The Assembly obviously gave a pleasant and very useful opportunity for men engaged in kindred intellectual pursuits at distant corners of the world, to establish a personal acquaintance and friendship, and to enter upon a track of future inter-communication and intercourse. Three languages, the English, the French, and the German, were used in the meeting, but few, if any, of the delegates proved to be unable either to speak their mind, or to understand the mental purposes of their neighbours, in plain English, when they were sufficiently roused to the effort by the interest of debate; and it was very agreeable on such occasions to hear the familiar English tongue interfused with the accents and idioms of nearly all the languages of the civilised world, from the coasts of Scandinavian Norseland to the sunny shores of the Mediterranean Sea. The character of the more solid gains that may be hoped for from the gathering has already been sufficiently expressed by the abstract that has been given of the substantial proceedings of the meeting. The more grave work of the Conference was lightened and varied by the visit of the delegates to the Observatories of Greenwich, Kew, and the Meteorological Office, and the Arsenal and Ordnance Manufactory at Woolwich, and by a dinner at the "Star and Garter" at Richmond, given to the Conference by the generous hospitality of the Meteorological Committee—all incidents which largely increased the facilities for friendly communication and intercourse, and which seemed to be fully appreciated and enjoyed by the foreign delegates."

The conclusion at which we arrive is that, as we have to do the work, we should do it well, and make our meteorological charts like our Admiralty charts, standards of reference for the world. In order to effect this, we must have active co-operation on the part of our captains, for, as we see from the last Report of the Meteorological Office, the number of observers in connection with that department falls short of one hundred annually, which must be admitted to be a very poor result as compared with the capabilities of our Merchant Navy.

It behoves, therefore, all our captains who have a taste for science and accurate observation of phenomena, to be up and doing. We may safely assert that no one, who has ever really kept a good log, has not found for himself the benefit to navigation which he derives from having thoroughly trustworthy instruments on board, and having taken regular and frequent observations.

R. H. S.

THE SUPPLY OF SEAMEN.



VERY interesting paper was recently read at the Royal United Service Institution on the subject of the supply of fighting seamen. The paper, which was chiefly interesting as to the fighting part, we do not reproduce. Some observations, which are interesting as to the supply of seamen for the Mercantile Marine and as to the Royal Naval Reserve, were made, of which the following is a summary:—

Mr. STIRLING LACON: When the navigation laws were repealed, and the apprenticeship system was abolished, it was foreseen by the Navy, what must sooner or later come to pass—namely, the gradual extinction of our sailors, and they set to work to bring up their own boys (for the boy is father of the man). I do not wish to enter into, or criticise this branch of the question, for, magnificent as I believe to be the present *personnel* of the Navy, I would simply ask, Does the country get the utmost that can be given for the money expended? Boys of the Navy are brought up at a cost of £60 per boy, whereas boys are brought up and fitted for the sea service in the training-ships, at a cost of £19 per boy; and I have the authority of Sir Rodney Mundy, for saying that the boys brought up for the Navy are too good, and that he would rather have a practical seaman before the mast than one that could work a double altitude.

But my object in rising is to direct attention to the Reserves, of which no mention has been made in this paper, and what we have to fall back upon in the event of war.

The extract given from the *United States Naval Institute Journal* is sufficiently startling, and it is a justification for my entering into this branch of the subject.

In former days, the Merchant Service was looked upon as the nursery for our seamen, and in the great Continental war, Nelson asked for 120,000 men. Parliament, a few years ago, voted 80,000 men as the Reserve of the Navy, but notwithstanding the £6 a year retaining money, £4 a year training money, and a prospective pension, it has been stated by Sir Walter Tarleton within the last four years in this Institution, that the numbers have annually been dwindling, and he did not think that, in the event of war, 6,000 would be forthcoming.

It is a most serious thing for the country—the present demoralisation and apparent gradual annihilation of our merchant sailors—for, as Captain Luce says, “Money can always be raised by the State, and money will produce any number of craft—but money will not make sailors. Gold will not produce them, and of what use are ships without the living

soul to command, and the hand ready to obey." Our peace Navy should be the nucleus, which in time of war might be supplied and strengthened from the Merchant Service, for whose benefit (the protection of our commerce) the Navy in a great measure exists.

What could the Peninsular and Oriental Steam Navigation Company contribute in the event of war by way of *personnel* to the defence of the country? I have it on the authority of the Marine Secretary of the Board of Trade, who has just returned from Egypt and the Suez Canal, that these ships are exclusively manned by Lascars and Chinamen,* not one Englishman on Board except the officers—

England, mistress of the sea,
With ironclads manned by the heathen Chinese.

And what support are you, the Navy, likely to derive from your old nursery of seamen?

During the present session a return has been laid before Parliament (Sir Selwyn Ibbetson) of 2,600 sailors who have been sent to prison for periods varying from three to six months with hard labour, for refusing to go to sea at the risk of their lives; now, what becomes of these men, and others who do not wait for such tender treatment? I have authority for saying that they are to be found in the coal mines and workshops of England. To such uses has England put her natural defenders. But you will say, You must overstate, you must exaggerate—for although there is an outcry against the scarcity of seamen, ships must, and do, go to sea as before. They do, minus the 480 unseaworthy ships which have been stopped and condemned under the Act of 1873. Then how are ships manned? I will tell you, and I speak from authority. In one of the north-eastern ports the crimps have a large shed, a manufactory of sailors. They get dock labourers, any refuse of the population, which, a few years ago, would not have been admitted on board any ship. Each of these they equip in a sailor's jacket, and take him to the shed, where there is a cart wheel, by means of which they teach him to steer. In the centre of the shed there is a cow's horn on a pedestal, round which they march, in order that if any questions are asked, they may say they have been round the horn. But, I asked, How are they taught to heave the lead? that, my informant assured me, was too antiquated an idea altogether.

I told all this to Mr. Plimsoll. "Well," he said, "I know how the crimps manufacture firemen at Liverpool. They also have a shed, and they put two casks, end to end, each with the bottom and head knocked out.

* [There is no law as to manning, and from personal experience we should say that the ships of the Peninsular and Oriental Company, with their Lascar crews and English officers and petty officers, are the best manned ships in the Eastern trade.—ED.]

When the recruit can throw a shovel full of coals or rubbish clean through both he is qualified for a fireman—but they do not guarantee him against sea-sickness."

The story of the *Cospatrick* will not be forgotten ; and we have evidence since then of two ships where the crew had burrowed down through the coals below the forecastle, and broke open the bulkhead, and with naked lights had plundered the cargo. When remonstrated with by the captain, they refused to give up their plunder, and broke out into a state of mutiny, so that he was obliged to put firearms into the hands of the passengers ; and in another case the captain, shortly after leaving the lead, in a gale of wind, discovered that he had got a crew, not one man of whom was a sailor, and he went below and took a dose of laudanum.

Such is the staff upon which England will have to lean in the event of war. You may bless your men-of-war, and your gunpowder, and your shot and shell, and your dynamite, and you may write up over Old England's front door "*cave canem*," but wood and iron won't fight without the gallant English hearts to man them.

Mr. SHAW LEFEVRE, M.P. : I think Admiral Willes, and, to some extent, Captain Wilson also, have, perhaps, overstated the difficulties of the country in the event of war. I think neither of them have quite appreciated the very great change that has taken place of late years in the complements of our ships, and the proportion of blue-jackets required. In the old three-decker, 600 blue-jackets were required out of a complement of 1,100, while in the *Sultan* only 230 blue-jackets are required, and in the *Derastation* less than 100. We have 18,000 blue-jackets, 12,000 of whom are in sea-going vessels ; 4,200 Coastguard, all in the prime of life ; and 6,500 pensioners, of whom 4,000 would be quite suitable to be put on board ship in the event of war. Six thousand pure seamen would be all that would be required to send to sea in every vessel that could by possibility be utilized at the outset of a war. I say that we have a greater number than that at the present moment, and, therefore, I do not see that we are in any danger of falling short on the outbreak of war. Captain Wilson has stated the French have 22,000 seamen ; but he must recollect that they have no Marines in the French service. Therefore, when you compare the 22,000 with our 18,000, you must take into consideration our 14,000 Marines. Captain Wilson has stated the number of men France has in reserve at 80,000, but that includes every man in the remotest way connected with the sea—even the bathing-machine men. The conscription maritime is very rigid. Captain Wilson, quoting from Captain Luce, says that the Crimean war is fraught with warning to us ; but I do not think we have to learn any very great lessons from the French. Though they were able to man their fleet on the first outbreak of the war, that fleet was mainly engaged in the

transport service. They did not even send their fleet to the Baltic, and their fleet in the Black Sea, instead of being engaged as ours was, was performing transport duties. You must look to the thing as a whole, and though the French service may be well organised—and they had a great number of men available at the outset, they had not the resources to fall back upon that we had. Captain Wilson states that during the American war the American Navy was increased from a few thousand men to 60,000 in a few months. I ask whether that would not be the case here ; for I believe that our resources are enormously greater, and that, although something may be said about the deterioration of the Mercantile Marine, that is due of late years to the substitution of steam for sailing vessels ; but that may be exaggerated, and I am confident that we have in our Mercantile Marine a very large reserve to fall back upon. Besides that, we have the enormous fishing population of this country, who, in the event of war, and when time is given—which I believe would be given—could be trained, and made very well fitted for service. To revert—18,000 blue-jackets is the force which successive Governments have agreed to as requisite. All that we can wish for is, that that number shall be as good as possible, and I am satisfied that the most rigid economist would spare no money to secure that object. Captain Wilson has pointed out that to supply the waste in the Navy—for every six men one boy must be brought in every year. This is a very startling fact. Captain Wilson says that it is partly due to desertion, and that the average yearly number of deserters has been 700, and last year it was 1,000. I think this is in a great measure due to the pay, which is very considerably below that of the merchant service. We train our boys at a great cost, rendering them better than merchant seamen ; and present pay, and not the prospective pension, is the one thing that operates ; and although I know it is a delicate question, and I should be sorry to proclaim it on the house-tops, yet I think it a very serious question whether we should not face this question of pay. If you could prevent desertion, it would not be necessary to train so many boys—and the expense of training boys is a very serious one. Is it desirable that the whole of our seamen should be entered as boys in the training-ships ? Would it not be desirable to enter a certain number of men direct from the merchant service every year ? But the difference of pay would interfere.

Commander Dawson : Seventeen thousand men is our reserve at the present moment. Of course it is far below what most naval officers would desire it to be. There are a great number of blackguards, and a great number of long-shore fellows in the Mercantile Marine ; but there are, on the other hand, a great many excellent men, and very excellent women to be found in the Mercantile Marine, and if these men have not

joined the Reserve in the numbers expected, depend upon it there is some good cause for it. I hope Mr. Shaw Lefevre's notion of bringing these men into the Navy will not be carried out. If we could persuade our men to go to the Mercantile Marine, it would be another thing; but men, after they have enjoyed the luxury of a man-of-war, are not likely to come into the Mercantile Marine, in the way that service is conducted at present.

Captain WILSON: I do not agree with Mr. Lacon when he says that our boys cost £60 per boy per annum, and that they are brought up in the training-ships for £19 per boy; but I agree that the country does not get the value of its money in the training of our seamen. I believe that if the whole fabric was wiped away, and the whole of the present system of training for the Navy swept away, it might be re-established on a sound footing, whereby the men might be more thoroughly instructed as fighting men, and also better instructed as sailors, and, indeed, in every respect rendered more efficient men, at one-third less cost. Mr. Stirling Lacon spoke about seamen breaking into ships' holds. What are our merchant seamen recruited from but from your prison ships? Can you wonder at all this? I do not?

[We have reduced the above from a summary that appeared in *The Navy*. We have on more than one occasion stated that the whole question of manning the Royal Navy and the Mercantile Marine is a question of wages. The same is true as regards manning the Army. It matters not how the question is discussed, it always comes to the same point. Give wages, and you can get men. What troubles the ingenious, and gives so much matter for useless talk, are proposals for getting seamen and soldiers without giving pay that will take men from other and at present more lucrative employments. It is not likely that a man will go into, or if he goes into stay, in the Navy, Army, or Merchant Service, if he can get more liberty and better pay in other employments.—Ed.]

SPRING SAFETY-VALVES.—We have great pleasure in announcing that Mr. Thomas Adams has undertaken to write a series of articles on the subject of spring safety-valves. The articles will extend over four months, and will embody a complete demonstration. Mr. Adams was one of the competitors for our prize under the *nom de plume* of "Molecular Vortex."

SHIPBUILDING, 1860 to 1873.

[A foreign correspondent has asked us for the following information. We have compiled it from trustworthy sources, and thinking many others among our readers will also be glad to possess the statistics, we publish them accordingly.—ED.]

NUMBER AND TONNAGE OF SAILING AND STEAM VESSELS BUILT AND FIRST REGISTERED IN THE UNITED KINGDOM IN EACH YEAR FROM 1860 TO 1873.

Years.	Sailing Vessels.		Steam Vessels.		Total.		Years.
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	
1860	818	158,172	198	53,796	1,016	211,968	1860
1861	774	129,970	201	70,869	975	200,839	1861
1862	827	164,061	221	77,338	1,048	241,399	1862
1863	881	253,036	279	107,951	1,160	360,987	1863
1864	867	272,499	374	159,374	1,241	431,873	1864
1865	922	235,555	382	179,649	1,304	415,204	1865
1866	969	207,678	354	133,511	1,323	341,189	1866
1867	915	185,771	295	97,219	1,210	282,990	1867
1868	878	290,477	232	79,096	1,110	369,573	1868
1869	731	245,373	281	123,203	1,012	368,576	1869
1870	609	136,286	434	226,591	1,043	362,877	1870
1871	485	60,260	537	330,798	1,022	391,058	1871
*1872	427	58,757	635	415,961	1,062	474,718	1872
*1873	422	89,626	509	363,917	931	453,543	1873

* The figures for the years 1872 and 1873 show the number and tonnage of vessels that were built in those years, whether registered or not.

SHIPBUILDING, 1875.

SAILING SHIPS.

Port.	No. of Ships first six months 1875.	No. of Ships correspond- ing period last year.	Gross Tonnage first six months 1875.	Gross Tonnage corresponding period last year.
Aberdeen ...	5	6	2,815	3,577
Barrow ...	5	1	4,635	1,777
Belfast ...	4	2	4,353	2,968
Bristol ...	—	5	—	501
Cowes ...	4	9	374	512
Dartmouth ...	18	13	1,568	995
Dundee ...	6	4	5,249	1,479
Faversham ...	1	4	39	368
Glasgow ...	29	12	31,267	10,951
Greenock ...	13	3	9,072	136
Hull ...	9	11	645	755
Jersey ...	9	5	818	360
Liverpool ...	12	15	6,747	9,623
London ...	8	17	353	1,496
Middlesbro' ...	1	1	182	1,467
Newcastle ...	3	3	738	460
Plymouth ...	7	9	1,314	532
Port Glasgow ...	9	8	9,006	9,147
Portsmouth ...	3	5	381	563
Rochester ...	6	5	282	192
Southampton ...	7	7	521	574
Stockton ...	2	2	2,594	3,616
Sunderland ...	28	26	20,634	23,122
Whitehaven ...	2	1	2,255	1,249
Workington ...	1	1	1,069	1,063
Yarmouth ...	5	6	145	216
Other Ports ...	96	109	13,077	13,065
Total	293	290	120,138	90,769

SHIPBUILDING, 1875.

STEAMSHIPS.

Port.	No. of Ships first six months 1875.	No. of Ships correspond- ing period last year.	Gross Tonnage first six months 1875.	Gross Tonnage corresponding period last year.
Glasgow ...	52	53	50,760	73,366
Greenock ...	11	4	13,998	10,239
Port Glasgow ...	18	12	8,038	9,959
Sunderland ...	12	13	15,522	16,720
Newcastle ...	21	23	24,433	30,316
North Shields ...	5	16	3,118	5,429
South Shields ...	8	10	3,095	4,469
Liverpool ...	5	18	4,127	11,511
Dundee ...	6	2	3,276	3,278
Hartlepool ...	11	5	12,399	5,139
Aberdeen ...	2	3	1,357	1,528
London ...	9	9	4,083	1,352
Belfast ...	—	2	—	10,012
Stockton ...	4	4	4,832	5,617
Kirkcaldy ...	—	1	—	1,160
Middlesbro' ...	8	8	8,657	7,690
Hull ...	1	5	3,110	5,230
Leith ...	—	2	—	2,576
Bo'ness ...	2	1	1,841	1,344
Whitehaven ...	1	1	232	889
Barrow ...	1	4	1,025	4,817
Whitby ...	4	1	4,602	1,416
Other Ports ...	17	9	1,906	1,287
Total	198	206	170,406	214,794

OUR PARLIAMENTARY RECORD.

Merchant Shipping Bill, Friday, June 18th, 1875.—The Committee on this Bill was resumed. Mr. Hamond's amendment being again taken into consideration.—Sir C. ADDERLEY said that, in consequence of what had been said in reference to this particular proposal, he had determined as a compromise to accept the amendment which had been placed upon the paper by the hon. member for Plymouth. The clause would then read as follows:—"Any document authorising or purporting to authorise the payment of money on account of seaman's wages, except to the extent of one month's wages in advance shall be void." A very lengthy discussion took place, the greatest diversity of opinion being expressed by the various members. Our space forbids us to give even an outline of the debate. Mr. HAMOND ultimately withdrew his amendment, and an amendment by Mr. BATES limiting the amount of the advance note to one month's wages was agreed to, as was also an amendment proposed by Mr. GORST permitting cash advances to be made. The question that the clause as altered stand part of the Bill was then put, when Mr. MUNTZ, Mr. NORWOOD, Mr. MACGREGOR, Mr. BRASSEY, Mr. KNATCHBULL-HUGESSEN, and others expressed their objection to it. Mr. BATES contended that the clause, as amended, would effect an important improvement in the law, and the CHANCELLOR of the EXCHEQUER pointed out that to reject the clause, after the recommendation of the Royal Commission, would be to admit that the advance-note system was a good one or that Parliament was unable to deal with it, although it was abundantly clear that it was a system requiring amendment. For twenty years the necessity of dealing with the question had been recognised, and the Government now thought the clause, as modified, would afford a very convenient stepping-stone towards the complete abolition of the system. The system of advances was entirely different from that of advance notes and he saw no reason why it should not be permitted as proposed by the hon. and learned member for Chatham. They had no desire to limit freedom of contract between shipowners and seamen in the matter of money advances, but wished merely for the present to restrain the use of a particular instrument which was liable to much abuse. After a few words from Mr. MACIVER, Mr. REED suggested that the Government should withdraw the clause. Mr. DISRAELI confessed that when he came down to the House he was under the impression from what passed last night that this clause would not be insisted upon. It seemed, however, that the clause had been modified this morning by an amendment proposed by the hon. member for Plymouth; but from the opinions which had been given on both sides of the House it was evident that the clause

as modified did not meet general acceptance. His own opinion on the matter was not changed. He believed that freedom of contract was a necessary condition in a commercial and manufacturing nation, and the clause was originally introduced only in deference to the strong recommendation of the Royal Commission. But the clause had now been modified and its efficacy diminished to a great extent, and in its attenuated and diminished form it did not appear to possess the confidence of either side of the House. Under these circumstances it appeared to him that it would be wise to adopt the suggestion of the hon. gentleman opposite and to omit the clause. The question that the clause stand part of the Bill was then put, and negatived. The following addition, proposed by Mr. NORWOOD, that "in cases where any seaman shall refuse or neglect to receive his wages, it shall be lawful for the master or owner to deposit the same with the superintendent, and in any legal proceedings thereafter brought by such seaman, he shall not recover costs unless the amount awarded exceeds the sum deposited with the said superintendent," was agreed to, and the clause, as amended, was ordered to stand part of the Bill. On clause 12, amendments proposed by Mr. SHAW-LEFEVRE and Mr. CHARLEY were agreed to, and progress was reported.

Business of the House.—The Merchant Shipping Bill, Thursday, June 24th.—In the course of a debate on the progress of the business of the House, Mr. PLIMSOLL expressed a hope that, whatever measures the Government might find it necessary to throw overboard, they would either find or make time to carry the Merchant Shipping Bill. He had carefully abstained from taking part in the discussion in Committee, being anxious to facilitate the progress of the Bill; and being anxious to reserve himself until they reached the heart of the subject.—Mr. BENTINCK hoped that whatever Bills the Government should resolve to abandon, they would include among them the Merchant Shipping Bill, for if it passed it would perpetuate all existing evils, and add to the loss of life which the hon. member for Derby deplored.

The "Druid" Steamship, Friday, June 25th.—In reply to Mr. PLIMSOLL, Sir C. ADDERLEY said: The Court of Inquiry of February, 1873, as to the loss of the *Druid* steamship recommended prosecution, but the law officers being referred to, gave an opinion that the proceeding before the Home Office solicitor should be stopped. The coroner's jury had acquitted the owner of manslaughter, and the law officers considered that there would be great difficulty in proving the case. The fact of the Board of Trade having a solicitor of their own does not, therefore, afford a reason for proceeding now, two and a-half years after the case.

The Wreck Register, Friday, June 25th.—In reply to Mr. PLIMSOLL, Sir C. ADDERLEY said: The Wreck Register to June, 1874, will be in the hands of members in a few days, and that to June, 1875, will be pre-

sented early in July, means having been taken to expedite these returns. The former delay arose from the periods of the returns being from January to December, instead of from June to June, as now, and the extra work thrown on the department by the Royal Commission on unseaworthy ships.

The Merchant Shipping Bill, Friday, June 25th.—Mr. PLIMSOLL asked the First Lord of the Treasury whether he could take the Merchant Shipping Bill as the first order of the day on Monday, seeing that in its present position two nights' debates would probably finish the measure.—Mr. DISRAELI said it had already been arranged that the first order of the day for Monday next should be the second reading of the Bill relating to the Labour Laws. It would not be convenient to put down the Merchant Shipping Bill as the second order, but he would bear the matter in mind, and at the proper time announce the date on which the consideration of the Bill would be resumed.

The Merchant Shipping Bill, Thursday, July 1st.—Sir C. ADDERLEY, in answer to Lord ESLINGTON, said there had been no protests from agents of foreign shipowners at any ports against the 6th clause of the Merchant Shipping Bill since it came under discussion in Committee, unfortunately so late as the 17th of June. The 6th clause has not passed, nor been debated, but is postponed. It proposes no interference with foreign shipping, but, on the contrary, its object is the prevention of British ships from assuming falsely a foreign character, which is as much in accordance with applications now being made by foreign Powers to us as it is in the interest of all honest British shipowners, and for this purpose the clause would enable the public officer to demand the production of papers showing the ship's assumed nationality. Some memorials were received in May, but were based upon an entire misconception of the meaning of the 6th clause. I propose to amend the postponed clauses in their wording before they are brought up again, but not in their substance.

Daunt's Rock, Friday, July 2nd.—In reply to Mr. DOWNING, Mr. HARDY said questions respecting Daunt's Rock, off Cork Harbour, ought to be addressed to the Board of Trade rather than to the War Office. He did not think it was in the power of anybody to state at present whether any plans likely to be practicable had been proposed for the removal of the rock. A report, made by the officials engaged in the experiments, was now under the consideration of the Board of Trade, and that department would probably be able in the course of a few days to give an answer to the hon. gentleman.

The Merchant Shipping Bill, Monday, July 5th.—Replying to Mr. RATHBONE, Mr. DISRAELI said he could not fix the day for discussing the Merchant Shipping Bill, though he felt a confident hope that day was

approaching. At a later period of the sitting, however, Sir C. ADDERLEY, in answer to Mr. GOURLEY and Mr. GOSCHEN, stated that Monday would be named for resuming the Committee on the Bill, with every hope of being able to proceed with it on that day.

Rule of the Road at Sea, Thursday, July 8th.—In answer to Mr. GOURLEY, Sir C. ADDERLEY, said the Departmental Committee on the rule of the road at sea are at the conclusion of their work. Their draught report is already in my hands. There are, however, men among them eminently answering to the description of the proposed addition to their number as men of first-rate practical experience, and I do not think the addition of collier shipmasters would have added to their authority.

Survey of Passenger Ships, Friday, July 9th.—Captain PIM asked a question as to the legality and sufficiency of the survey of a passenger steamer by only one surveyor.—Sir C. ADDERLEY, in reply, said he could only repeat an answer he had given to a former question. Under the 305th Section of the Act of 1854, surveyors were appointed. Under the 309th Section, passenger ships were surveyed by a shipwright and an engineer surveyor. In the case of iron vessels, the engineer surveyor was the iron shipwright surveyor. If one person was both an engineer surveyor and a shipwright surveyor, the object was then best attained by his making both surveys. The 307th Section imposed on the Board of Trade the discretion of regulating the mode of survey. Experience had shown that a very efficient survey of a passenger steamer's hull and machinery could be made by one surveyor in the time which was called "short" in the question, but which was ample in practice. If any surveyor was pressed for time, in a special case, he had always another to help him.

The Merchant Shipping Acts' Amendment Bill, Monday, July 12th.—Mr. EUSTACE SMITH gave notice that in the event of this Bill not being proceeded with to-night, he should, on the next occasion of its being put on the paper, move that the order be discharged.—In answer to Mr. RATHBONE, Mr. DISRAELI subsequently said: It is difficult to fix a day now for the discussion of the Bill, but after the Labour Laws and Agricultural Holdings Bills are passed, or a considerable advance is made with them, the Merchant Shipping Acts' Amendment Bill is the measure I shall endeavour to bring before the consideration of the House.

The Case of the "Darent," Thursday, July 15th.—Mr. PLIMSOLL asked the President of the Board of Trade whether it was the fact that the *Darent* sailed from North Shields recently for Palermo with deficient freeboard, and also a list upon her, her freeboard being 8 in. only on the starboard side, and 3 ft. 1 in. on the port side; and whether any officers were stationed at the ports on the Tyne, and the Wear, and the Tees competent to act on their own discretion in stopping vessels in a dangerous condition.—Sir C. ADDERLEY: The *Darent* was reported to

have been ready to leave the port of North Shields with freeboard and list of the amount stated in the question. Whether she went to sea with the list unadjusted I cannot say. To stop a steamship on the score of list alone is hazardous, as the list is frequently adjusted at the last moment. It is quite possible that the adjustment of list may correct an otherwise deficient freeboard. In my opinion the Act of Parliament does not empower the Board of Trade to delegate to an officer stationed at the port authority to stop a ship.

The "Estella," Thursday, July 15th.—Mr. PLIMSOLL asked the President of the Board of Trade whether it was true that the owner of the merchant steamer, which was ordered to be detained as unseaworthy, overloaded, and in a condition dangerous to human life, defied the officers of the Government; and whether, when a Custom House officer was put on board to enforce her detention, he was not forcibly carried to sea to a Russian port; and if these facts were as stated, what steps the Government propose to take to strengthen and enforce their authority.—Sir C. ADDERLEY: It is true that the master of the *Estella*, which was ordered to be detained for survey as overloaded, carried to sea the officer who was placed on board by the Customs for the purpose of detaining her. The master has been convicted under the Act of 1873 for preventing the survey, and it appears that the Court considered there were special reasons for inflicting a light penalty—£5 and costs. But I am in communication with the Customs on the question whether further proceedings should not be taken to punish the very grave offence of carrying to sea a Government officer placed on board by lawful authority for the purpose of detaining a ship.

CORRESPONDENCE.

"THE MIZEN-YARD."

To the Editor of the "Nautical Magazine."

SIR,—The plate in your February number representing Vasco de Gama's ship has revived in me an idea which I have long entertained, that there does not now exist any reason why the lower-yard on a ship's mizenmast should not be called the mizen-yard, just as the lower-yard on her main and foremasts are the main and fore-yards respectively. Uniformity would certainly demand that the change which I suggest should be made. It is of course easy to see how the present name originated. When the mizen was a lateen sail its yard was naturally the mizen-yard, and

for distinctiveness the other was named the cross-jack yard. This old-fashioned mizen-yard having by the abolition of its sail been for ever done away with, would it not be desirable to get rid as well of the name, which, while that sail existed, was forced, so to speak, upon what is now in reality the mizen-yard? I am aware of the difficulty in changing old-established names, but I also know that it can be done. I am old enough to have been in command of a vessel, when the word "larboard" was first generally expunged from our nautical vocabulary, say thirty years ago or thereabouts. I remember quite well the difficulty I had to restrain myself from laughing at the astonishment of my crew, when without previous warning I gave the order to set the "port" maintop-gallant studding sail. They appeared to think me crazy. The word "port" had been used for the helm, and for a ship's list (no one ever said a list to *larboard* since I can remember) long before the time I mention, but for nothing else strangely enough. Now, the word "port" has so universally superseded "larboard," that the astonishment I have described would be experienced by any crew to whom the word *larboard* should be used. I hope that some of your numerous readers will consider this suggestion of mine. I admit that there is no absolute necessity for the change such as attached to the word *larboard*, and yet an Admiralty order was required before it could be expelled from the Navy (though its desirability was self-evident), so tenacious are old salts of old established sea terms.

I must apologise for the length to which this letter has unwittingly extended, but I trust that having been for many years past an occasional contributor to the old *Nautical* you may find a corner in which to insert it, especially as it will have had a long journey from your Antipodes to you.

I remain, Sir,

Your obedient servant,

HENRY T. FOX.

Sydney, New South Wales, May 18, 1875.

POTI.—BLACK SEA.

Messrs. IMRAY AND SON, of the Minorities, have been kind enough to forward us the following for publication :—

"The usual anchorage is with the lighthouse bearing about N. by E. $\frac{1}{2}$ E. two miles, in 15 to 12 fathoms. This is the best position for the convenience of lighters going to and from the river. The wind during fine weather is generally N.W. during the day and off the land at night. Currents at the anchorage are variable and strong, but prevail mostly N. or S. with the winds.

"Pratique is obtained at Poti about a mile up the river, the quarantine station being at the upper end of the wharf.

"Entering the river should never be attempted when there is any sea, as the bar having only four or five feet water, and a three knot current running out is very dangerous, and the best swimmer could not save his life, but become entangled in the network of large hooks with which the fishermen cover the bar in every direction.

"Although this roadstead has a bad name, it would seem that vessels with good ground tackle can always ride out a gale. I believe no English vessels have driven ashore, though many Greeks have. Poti is fast increasing its importance, and a harbour is being constructed about two miles north of the lighthouse."

JABEZ SMITH,

S.S. *Cassini*.

July 6, 1875.

EX-MERIDIAN PROBLEM.

To the Editor of the "Nautical Magazine."

SIR,—It is with interest I have read Mr. J. F. Trivett's ex-meridian problem in the *Nautical Magazine* for December, 1873, and the example he gives, page 1,006.

To the sine sq. of the hour angle he adds ·109, the result of Lat. $49^{\circ} 0'$ and Decl. $22^{\circ} 0' 0''$.

Can you inform me whence this correction of ·109 is obtained?

Yours faithfully,

ENQUIRER.

Shanghai, 27th April.

In reply to "Enquirer," Captain Trivett has kindly furnished the following:—

"In answer to 'Enquirer,' if he looks at page 850 of Raper's Navigation, in table 70, with Lat. 49° at the side, and under Declination 22° at the top, he will find the quantity 0·109.

"But from the question of 'Enquirer' we presume he does not use Raper's Tables; in that case, we beg to inform him that 0·109 is the abbreviated sum of the log cosine of the lat. by account, the log cosine of the declination, the cosecant of the (lat. + declination), and the log of 2, the first three, or at the most the first four of the logs, being sufficient for all practical purposes.

"In answering 'Enquirer's' question, we think we have shown one of the advantages of Raper's method in the use of this problem—viz., its extreme simplicity and brevity.

"But a person accustomed to the use of Raper's Epitome is not confined to any special table for the solution of his nautical problems.

"Any work containing the common log sines, tangents, &c., will be sufficient for his purpose."

TRAINING-SHIPS.

To the Editor of the "Nautical Magazine."

SIR,—Those of your readers who are acquainted with the subject will have been able of themselves to correct the misstatements of "Observer" in his attack upon the *Warspite* and all other existing training-ships, which appears in this month's *Nautical Magazine*; but it is well, notwithstanding, that the attack should have a few words of calm reply.

"Observer" asserts that in the recent correspondence in the *Times* (it was last Christmas, by the way) I entirely lost sight of the broader view of the question—viz., providing a steady supply of well-trained boys, caring only for the prosperity of the *Warspite*, and fearing that the establishment of another ship in the Thames would injure that vessel.

A more complete misrepresentation of the meaning of my letters—copies of which are now before me—it would be difficult to conceive. There is no fear in my mind for the *Warspite*. While that ship continues to turn out such a fine set of boys, as she is now doing, her success is assured. My aim (and I have advocated it previously in the columns of the *Times*) was the *extension* of the training-ship system. Instead of placing another ship in the Thames, where at present the supply equalled the demand, I ventured to suggest that it would be far better to establish several more at the provincial seaports, where they are greatly needed, and I alluded to the fact that the Marine Society had frequent applications for boys from the outports. In fact, to copy Lord Eslington's words in his speech on the Naval Reserve last year, I wished there should be a "*Warspite* in every port."

Of course this is no new idea. In the able article on "British Ships and British Seamen," which appeared in your number for March, 1871, the necessity of increasing training-ships like the *Warspite*, which admits honest children of the working class, is particularly dwelt upon.

Your correspondent indulges in an unworthy sneer at Committees—"Very good and worthy men, who imagine they are doing great good and really would do so if they only knew the way." He can know little really of the matter. The excellent institutions that have of late years followed in the wake of the Marine Society may safely be left to speak for themselves; it is enough for me to say that among the gentlemen who devote their time to the management of the *Warspite*, there are, besides

eminent shipowners, officers of the highest standing (one has himself commanded a training-ship), thorough practical seamen, whose constant supervision is anything but a sham.

"Observer" falls into the singular error of supposing that training-ships are under the control of the Government Inspector of Education, and have an educational grant. If this were withdrawn, he says, the standard of "their scholastic instruction would at once fall." Now the *Warspite* is under no Government inspection, and has no educational grant. The excellence of its school, as well as that of its seamanship, is simply attributable to the staff of efficient instructors in each department.

With regard to the time boys remain on board before being drafted, it is now a little under a twelvemonth. For the younger boys a longer period may possibly be considered desirable by some; but whether the older ones are not better at sea is very questionable. The restraint of lengthened confinement on board a training-ship in the river for these big lads of seventeen, longing to get away to sea, is great.

But "Observer" may depend upon it that the training is anything but superficial. Does smartness aloft, knowledge of the compass, being able to row, to used the palm and needle, to swim, to heave the lead, count for nothing? All this, and much more, may be seen well taught on board the *Warspite*.

There must be some vital excellence in a system which turns out boys of whom (not to fill your columns with other testimony) the Inspector of Naval Training-ships reports, "They are the best boys we get." The value of the existing training-ships is real, and none but your correspondent will doubt that the Marine Society—which led the way by upwards of a hundred years in the establishment of these institutions, which has sent 58,000 boys to sea, and which still pours into the Royal and Mercantile Navies a steady stream of young sailors of good character—is doing a great work, and deserves the warm support of every lover of his country.

I am, Sir, yours faithfully,

S. WHITCHURCH SADLER,
Paymaster-in-Chief R.N.

Marine Society's Offices,
54½, Bishopsgate Street Without, E.C.,
17th July, 1875.

BOOKS RECEIVED.

Sun's True Bearing, or Azimuth Tables, computed for intervals of Four Minutes, between the Parallels of Latitude 30° N. and 30° S. inclusive, with Variation Chart, and Instructions for using the Tables in Danish, Dutch, French, German, Italian, Portuguese, Russian, and Spanish. By Captain John E. Davis, R.N., F.R.G.S., and Percy L. H. Davis, F.R.A.S. London: J. D. Potter. 1875.

In a previous number (October, 1874) we notified that this work was in the press and would shortly be published. It is so this day, and we congratulate our readers of the Royal and Mercantile Navies on its production, particularly those who have to navigate iron ships, when so much depends, both in regard to time and safety, on an accurate knowledge of the deviation of the compass. Although this work follows in the wake of Staff-Commander Burdwood's well-known tables of the same nature (comprising the zones between the 30th and 60th degrees of latitude), it is not the less valuable as completing them to the equator, and the authors have done wisely in adopting, as they call it, "the clear and comprehensive arrangement" of their predecessor.

With these tables the captain of a ship may be said to carry the knowledge of the deviation of his compass in his waistcoat pocket: having the apparent time, he can, from a compass-bearing of the sun, and the use of the variation chart appended, ascertain his deviation and correct his course without quitting the deck.

The variation chart is rendered very clear by the use of *red* lines for westerly variation, and *blue* lines for easterly variation; these distinctive colours render a mistake almost impossible.

Sound. By John Tyndall, D.C.L., L.L.D., F.R.S. Third Edition. London: Longmans. 1875.

THE new matter of greatest importance which has been introduced into this edition is an exhaustive account of the recent investigations into the propagation of sound through the atmosphere, in relation to the question of fog-signalling. The subject is familiar to most of our readers, the experiments and results having been more than once described in a general way in these pages. Dr. Tyndall, however, treats the subject altogether scientifically, but makes his treatment, as usual, brilliant and fascinating. His summary of this part of the work is extremely clear and concise, and contains so much valuable information that we take the liberty of extracting it for the benefit of our readers. The entire work is so good and instructive that it is beyond praise, but should be in the possession of all persons interested in science.

"SUMMARY.

"The paper of Dr. Derham, published in the Philosophical Transactions for 1708, has been hitherto the almost exclusive source of our knowledge of the causes which affect the transmission of sound through the atmosphere.

"Derham found that fog obstructed sound, that rain and hail obstructed sound, but above all things falling snow, or a coating of fresh snow upon the ground, tended to check the propagation of sound through the atmosphere.

"With a view to the protection of life and property at sea, in the years 1873 and 1874 this subject received an exhaustive examination, observational and experimental. The investigation was conducted at the expense of the Government and under the auspices of the Elder Brethren of the Trinity House.

"The most conflicting results were at first obtained. On the 19th of May, 1873, the sound range was $3\frac{1}{3}$ miles; on the 20th it was $5\frac{1}{2}$ miles; on the 2nd of June, 6 miles; on the 3rd, more than 9 miles; on the 10th, 9 miles; on the 25th, 6 miles; on the 26th, $9\frac{1}{2}$ miles; on the 1st of July $12\frac{1}{4}$ miles; on the 2nd, 4 miles; while on the 3rd, with a clear, calm atmosphere and smooth sea, it was less than 3 miles.

"These discrepancies were proved to be due to a state of the air which bears the same relation to sound that cloudiness does to light. By streams of air differently heated, or saturated in different degrees with aqueous vapours, the atmosphere is rendered *flocculent* to sound.

"*Acoustic clouds*, in fact, are incessantly floating or flying through the air, they have nothing whatever to do with ordinary clouds, fogs, or haze. The most transparent atmosphere may be filled with them; converting days of extraordinary optical transparency into days of equally extraordinary acoustic opacity.

"The connection hitherto supposed to exist between a clear atmosphere and the transmission of sound is therefore dissolved.

"The intercepted sound is wasted by repeated reflections in the acoustic cloud, as light is wasted by repeated reflections in an ordinary cloud. And as from an ordinary cloud the light reflected reaches the eye, so from the perfectly invisible acoustic cloud the reflected sound reaches the ear.

"Aerial echoes of extraordinary intensity and of long duration are thus produced. They occur, contrary to the opinion hitherto entertained, in the clearest air.

"It is to the wafting of such acoustic clouds through the atmosphere that the fluctuations in the sounds of our public clocks and of church bells are due.

"The existence of these aerial echoes has been proved both by observation and experiment. They may arise either from air-currents differently heated, or from air-currents differently saturated with vapour.

"Rain has no sensible power to obstruct sound.

"Hail has no sensible power to obstruct sound.

"Snow has no sensible power to obstruct sound.

"Fog has no sensible power to obstruct sound.

"The air associated with fog is, as a general rule, highly homogeneous and favourable to the transmission of sound. The notions hitherto entertained regarding the action of fog are untenable.

"Experiments on artificial showers of rain, hail, and snow, and on artificial fogs of extraordinary density, confirm the results of observation.

"As long as the air forms a continuous medium the amount of sound scattered by small bodies suspended in it is astonishingly small.

"This is illustrated by the ease with which sound traverses layers of calico, cambric, silk, flannel, baize, and felt. It freely passes through all these substances in thicknesses sufficient to intercept the light of the sun.

"Through six layers of thin silk, for example, it passes with little obstruction; it finds its way through a layer of close felt half an inch thick, and it is not wholly intercepted by 200 layers of cotton-net.

"The atmosphere exercises a selective choice upon the waves of sound which varies from day to day, and even from hour to hour. It is sometimes favourable to the transmission of the longer, and at other times favourable to the transmission of the shorter, sonorous waves.

"The recognised action of the wind has been confirmed by this investigation."

The Milky Way and *The Seat of Power* are the titles of two neat little pamphlets sent to us from Christchurch, New Zealand. The author is Captain John Leith, of the barque *Esheculador*. A thousand years after this, when, perhaps the inhabitants of the Britain of the Antipodes shall be as distinguished in science as the British on this side of the ball we walk on, are to-day, these little pamphlets may be carefully preserved in their New Zealand Museum Library, as, perhaps, their first efforts in higher science. We prefer to judge of these by their aim rather than by their achievements. "The Milky Way," we are told, is composed of fixed stars, and the object of the writer is to show that these are "governed by the same laws which govern our solar system." If he had told us that these distant bodies are governed by quite another set of laws, and what these other laws are, the pamphlets would have been much more interesting, and would have possessed more originality. The author is reverently impressed with the order and immensity of the

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"The atmosphere exercises a selective choice upon the waves of sound which varies from day to day, and even from hour to hour. It is sometimes favourable to the transmission of the longer, and at other times favourable to the transmission of the shorter, sonorous waves.

"The recognised action of the wind has been confirmed by this investigation."

The Milky Way and *The Seat of Power* are the titles of two neat little pamphlets sent to us from Christchurch, New Zealand. The author is Captain John Leith, of the barque *Esheculador*. A thousand years after this, when, perhaps the inhabitants of the Britain of the Antipodes shall be as distinguished in science as the British on this side of the ball we walk on, are to-day, these little pamphlets may be carefully preserved in their New Zealand Museum Library, as, perhaps, their first efforts in higher science. We prefer to judge of these by their aim rather than by their achievements. "The Milky Way," we are told, is composed of fixed stars, and the object of the writer is to show that these are "governed by the same laws which govern our solar system." If he had told us that these distant bodies are governed by quite another set of laws, and what these other laws are, the pamphlets would have been much more interesting, and would have possessed more originality. The author is reverently impressed with the order and immensity of the

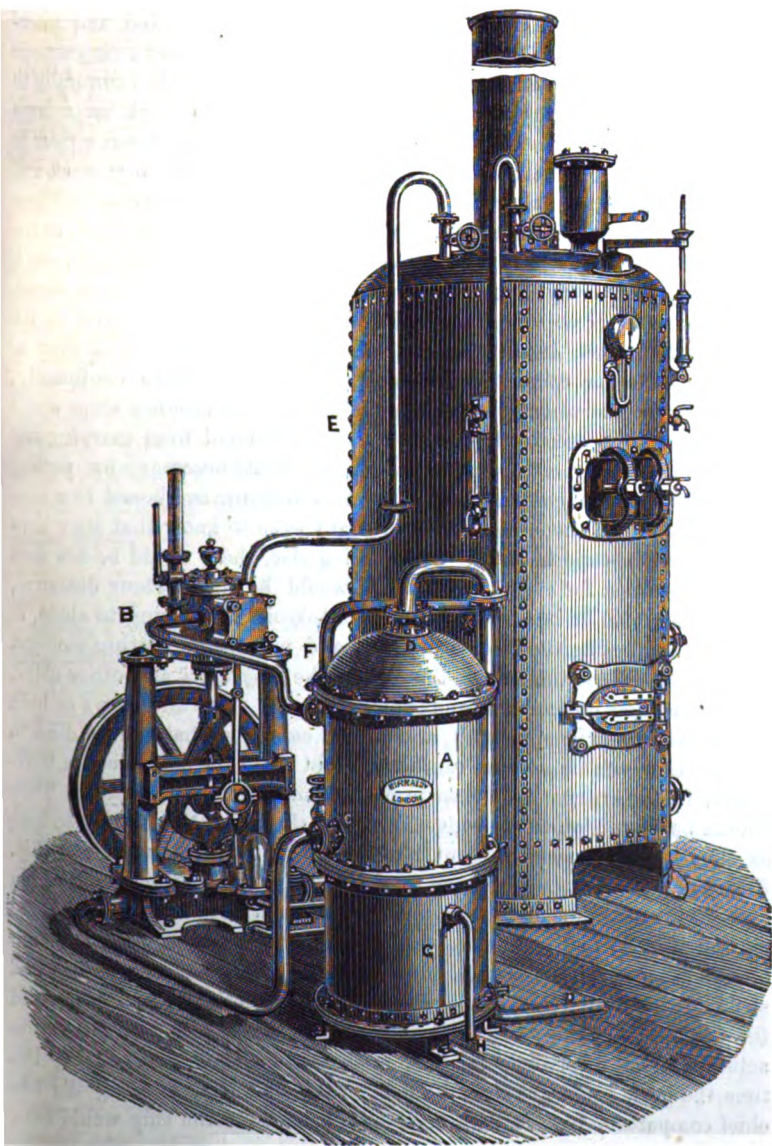
universe, as he recognises the plane of the milky way to be the plane of "a glorious zone of system (similar to our own, though some are of far greater magnitude), around the geometrical centre of the whole universe." How much greater should his wonder be when he realizes that the milky way and all its stars make up but one cluster or nebula, and that the circling system of the universe is not a revolution of systems like our solar system, but a procession in which the individuals are nebular systems of suns, and for aught we know we cannot stamp finality upon even this expansion of our ideas, for call we this total a Universe, we may one day have to construct a word of greater grasp to designate the coronet of the Almighty, its every gem such a Universe.

MARINE INVENTIONS.

[On receipt of a summarised description of any new invention connected with ships or navigation, the Editor of the *Nautical Magazine* will publish, under the above heading, a brief account of it.]

KIRKALDY'S DISTILLING APPARATUS.—Cool, pure, fresh filtered water is always a great boon, and especially so at sea; it is to make an abundant supply of this always obtainable from sea-water that the above apparatus has been designed. It is simple in construction, and therefore so easily kept in order, that any careful person can use it efficiently for a very lengthened period without any repairs being required. The compactness of the whole may be judged from the fact that a boiler, condenser, and circulating pump, capable of producing 900 gallons of cold fresh water per day, may be placed in an area of six feet. There have been many different arrangements invented and tried; the chief principle in each as a rule being the common worm which is a coil of metal tubes enclosed in a cylinder. The working of the apparatus is as follows:—To the cylinder of the condenser A, a jet of cold water is supplied from the pump B, through an inlet C at the lower part of the cylinder; this water is then charged through the outlet at the top D (being then useful for washing decks, and in case of fire forming a valuable fire-engine); the steam from the boiler E is admitted through an inlet F at the side of the cylinder, and is condensed by the action of the cold water surrounding the coil; it then passes into the filter G, which is charged with charcoal from which it issues at the outlet H as cold filtered water. This apparatus is manufactured by Mr. Kirkaldy, an engineer of West India Dock Road, Lime-

house, and is one of those required by the Board of Trade to be carried on board emigrant ships, as will be seen by a notice published this month in "Our Official Log."



COXHEAD'S PATENT HYDRAULIC GEAR FOR WATER-TIGHT DOORS ON BULKHEADS, &c.—Mr. Coxhead has for some years past been pondering on the desirability of providing more means of safety for our ships. He starts on the premiss that the ship itself should be rendered as nearly invulnerable as possible. Life-saving apparatus of one sort or other carried on board is all very well in its way, and is invented and introduced, and carried with the very best of intentions; but it has a very serious drawback—as a rule, it is all useless. Most things work beautifully in models on an office carpet, and some go so far as to work on a large scale when the ship is at anchor, or whilst on a passage down a river in smooth water. It is a very different thing when trouble arises at sea, where confusion reigns, and “presence” of mind is “absent.” There is sure to be some hitch. The proper things are not at hand, or the proper men are absent, or probably occupied with other things; or, if everybody and everything can be found to work the contrivance—boat, raft, gimcrack, or whatever it is—the thing itself comes to grief in the attempt to launch it, or, if it survives the launching, turns over or gets stove in, or caves in completely. This is the case continually, and is not the exception. It is a debateable question whether ships would not be safer at sea if they were by law prohibited from carrying any boats or life-saving rattle-traps, beyond the boats necessary for putting out anchors, and a circular life-buoy or two to throw overboard to a man in the water. If the crew and all on board were to know that they have no chance of escape from fire or anything else, there would be few fires and few wrecks, for everyone on board would be an amateur detective, and there would be but little chance of look-out men going to sleep, of skippers neglecting the lead, or of crew and passengers getting amongst the cargo, and having, as was the case in the *Cospatrick* and other ships, a drink amongst inflammable and explosive stores. This all throws us back on the safety of the ship itself, and makes us think what can be done to render her more safe. There can be no doubt about the usefulness of bulkheads, if there are enough of them properly placed and properly fitted. They should be placed wherever convenient, and the more the better, so long as they can be placed without hinderance to the working of the ship. For convenience, it is necessary to provide doors of communication in some of those bulkheads. The great difficulty hitherto experienced is the closing of these doors upon an emergency. Somehow or other they are always left open and forgotten, or get jammed. This was very plainly and strikingly illustrated in the case of collision between the *Ville du Harre* and the *Loch Earn*, where, according to the evidence, the *Ville du Harre* was actually afloat for twenty minutes after the collision, and during this time the crew could not close the door in the bulkhead dividing the two chief compartments. If that door had been shut the ship would have

been safe. As it was, a valuable ship and cargo, and many lives, were lost, and they were lost entirely through this one circumstance. Can something be produced that will be "dependable" in the hour of need—something that can be worked readily and easily, and prevent loss of life and treasure? It is to supply this need that Mr. Coxhead has introduced his apparatus. It is said to be simple and effective. It is said that a lad of twelve years of age can comprehend and work it. It is said to be always ready when wanted. It is said there is nothing about it to rust up or become fixed from neglect. It is said that the door can be closed at any desired speed, from two feet per second, without doing damage to the door, frame, or machinery. Upon its descent, it is said to be ready for raising again without repairs. The lift can be accomplished in about four minutes. The actual time occupied with the one fitted on board the imperial German ironclad *Deutschland*, is, in closing, fourteen seconds, and, in opening, three minutes and a half. That is fact. This door in the *Deutschland* can be closed more quickly if required. The door is six feet high by four feet wide, and weighs about nine hundredweight. It requires one lad only to work it. This speed is utterly impossible of attainment with the ordinary screw gear, either for closing or for opening. None of the good qualities of the screw gear are, we believe, sacrificed, whilst the *Deutschland's* door has the additional advantage of rapid closing and non-liability to get out of order.

CAPTAIN SIR FREDERICK ARROW.—It is with much regret that we have to record the sudden death of Sir Frederick Arrow, the Deputy-Master of the Trinity House, who for many years has so ably presided over the councils of the Corporation. Twenty-five years ago the deceased gentleman was well known as a skilful and intelligent commander of some of our finest East Indian traders in Messrs. Green's employ. Since that period he has energetically devoted himself to the work entrusted to the Trinity House, of lighting and marking the dangers around our shores; and in bringing to his labour a vast store of practical nautical knowledge gained in his East Indian experience, he was well fitted to carry out the duties of his important position. Those who had the privilege of knowing him either privately or officially will readily recall his perfect geniality and friendliness; but withal he displayed shrewd common-sense and a conscientiousness in all his actions which made him respected as much as the former qualities made him beloved. The general lament of all who knew him, whether much or little, publicly or privately, is that they have lost a kind and true friend. The public service has undoubtedly lost a faithful and conscientious servant.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
178	INDIA—Bay of Bengal—Mutlah River	Removal of Light-Vessel.
179	ADRIATIC—Fiume	Alteration in Breakwater Light.
180	UNITED STATES—Mississippi Sound—Horn Island Lighthouse	Establishment of Fog-Signal.
181	UNITED STATES—Mississippi—Head of Passes Lighthouse	Establishment of Fog-Signal.
182	NORTH SEA—Netherlands—Hook of Holland	Establishment of Tidal Signals.
183	SPAIN—North Coast—Port Passages	Establishment of Leading Lights.
184	NOVA SCOTIA—South Coast—Barrington Bay	Establishment of Light-Vessel.
185	ENGLAND—South Coast—Shoreham Harbour	Alteration in Tidal Signals.
186	CHINA—Pescadores—Fisher Island—Libitah Point	Intended establishment of a Light.
187	MEDITERRANEAN—Tunis—Cape Bon	Date of Exhibition of Light.
188	SOUTH AMERICA—West Coast—Patagonia	Discovery of a Sunken Rock off.
189	ENGLAND—East Coast—Galloper Sand	Establishment of a Buoy to mark North End.
190	CHINA—Yang-tse-Kiang—Wusung River	Intended establishment of a Light.
191	CHINA—Yang-tse-Kiang—Wusung River	Intended alteration in Light.
192	CHINA—Yang-tse-Kiang	Alteration in Lighting Apparatus.

NAUTICAL NOTICES.

178.—INDIA.—*Bay of Bengal.*—*Mutlah River.*—The light-vessel hitherto moored off the Western, or Ward, channel of the Mutlah river, has been removed, and the light discontinued.

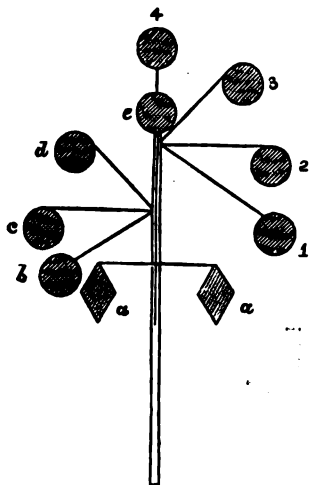
179.—ADRIATIC.—*Fiume.*—The light beacon off the breakwater has been replaced by a wooden lighthouse exhibiting a *fixed red* light, elevated 88 feet above the sea, which should be seen 10 miles. Vessels entering Fiume should leave this light on the starboard hand.

180.—UNITED STATES.—*Mississippi Sound.*—*Horn Island Lighthouse.*—A fog-bell, struck by machinery, has been established at the lighthouse on the east end of Horn island, Horn island pass. In thick or foggy weather it will be sounded *once* at intervals of *fifteen seconds*.

181.—UNITED STATES.—*Mississippi.*—*Head of Passes Lighthouse.*—A fog-bell, struck by machinery, has been established at this lighthouse, entrance of Mississippi river. In thick or foggy weather it will give *two* blows and *one* blow at alternate intervals of *ten* and *twenty* seconds.

182.—NORTH SEA.—*Netherlands.*—*Hook of Holland.*—The following

signals have been established at the Hook of Holland to denote the depth of water in the canal, viz. :—



		ft.	in.	
1	when there is	6	5	in the channel.
2	„	9	2	„
3	„	9	10	„
4	„	10	6	„
4 a	„	11	2	„
4 b	„	11	9	„
4 c	„	12	5	„
4 d	„	13	1	„
4 e	„	13	9	„
a	„	14	5	„
a a	„	15	1	„
2 a a	„	15	9	„
3 a a	„	16	8	„
4 a a	„	17	0	„
4 e a a	„	17	9	„

The signal *a*, *a a*, and a black triangle at one of the horizontal yard-arms, denotes that it is unadvisable to take the channel.

188.—SPAIN.—*North Coast.*—*Port Pasages.*—Three leading harbour lights are now provisionally exhibited to facilitate the navigation of the port of Pasages, viz. :—A *fixed red* light on the north wall of Santa Isabel castle, and a *fixed white* light above the fortifications on the south

side of the castle. They should be seen from a distance of 3 miles. A red light in the supplementary dockyard. This light is intended as a guide to vessels after having passed Cruces point.

Note.—Vessels entering port Pasages should keep the leading lights in Santa Isabel castle in line until Great Arando point is passed, and then steer half a point to the eastward to avoid the shoal water off Cruces point.

184.—NOVA SCOTIA.—*South Coast.*—*Barrington Bay.*—A fixed white light is now exhibited, 30 feet above the deck, from a light-vessel placed off the Wauses Ledge. The light-vessel is moored in 6 fathoms at low water, with the following bearings, viz.:—Wases Ledge S.W. by W. $\frac{1}{2}$ W. $\frac{3}{8}$ of a mile, and Baccaro point lighthouse S.S.E. $\frac{3}{4}$ E. $6\frac{1}{2}$ miles. Position, lat. $43^{\circ} 31' 5''$ N., long. $65^{\circ} 34' 25''$ W. The vessel is schooner rigged, painted red, with the name *Barrington* in white letters on her sides.

185.—ENGLAND.—*South Coast.*—*Shoreham Harbour.*—The following tidal signals have been established at the low lighthouse on the middle pier of Shoreham harbour, superseding those previously in use—viz.: A green light will be exhibited when there is from 8 to 11 feet on the tide-gauge at the middle pier, with a flowing tide. A white light when there is over 11 feet on the tide-gauge. A red light during high water slack tide.

186.—CHINA.—*Pescadores.*—*Fisher Island.*—*Litsitah Point.*—A light-house will shortly be erected close to the present native light tower on Litsitah point, south-west extremity of Fisher island. The light will be a fixed white light of the fourth order, elevated about 220 feet above the sea, and should be seen 15 miles. The tower will be of iron, 33 feet high, painted black. Approximate position, lat. $23^{\circ} 32' 45''$ N., long. $119^{\circ} 28' 15''$ E.

187.—MEDITERRANEAN.—*Tunis.*—*Cape Don.*—The light on this Cape, of which previous notice has been given, Nautical Notice, No. 140 (June, 1875), is now permanently exhibited.

188.—SOUTH AMERICA.—*West Coast.*—*Patagonia.*—Information has been received from Commander Robert B. Williams, of the Pacific Steam Navigation Company's ship *Cotopaxi*, that when running down the coast between the Gulfs of Penas and Trinidad, the vessel passed within a mile of a sunken rock, on which the sea was breaking. It was supposed that the rock was about 10 or 12 feet under water. The position assigned to this sunken rock is lat. $49^{\circ} 30'$ S., long. $75^{\circ} 40'$ W., but the weather did not admit of bearings or observations.

189.—ENGLAND.—*East Coast.*—*Gallopier Sand.*—With reference to Nautical Notice, No. 116 (May, 1875), on the intended establishment of

a buoy to mark the north end of the Galloper sand, a large conical buoy, painted black and white horizontal bands, surmounted by a staff and diamond, and marked *North Galloper*, has been placed in the position assigned. The buoy lies in 14 fathoms at low water springs, with the following bearings and distances, viz.:—Galloper light-vessel, S.W. $4\frac{1}{2}$ miles; Kentish knock light-vessel, W. by S. $\frac{1}{2}$ S. 14 miles; Inner Gabbard buoy, N. $\frac{1}{4}$ W. $7\frac{1}{2}$ miles; Outer Gabbard buoy, N.E. by N. $9\frac{1}{2}$ miles. These bearings and distances place the buoy in lat. $51^{\circ} 40' N.$, long. $1^{\circ} 59' E.$

190.—CHINA.—*East Coast*.—*Yang-tse-Kiang*.—*Wusung River*.—An iron screw pile lighthouse will shortly be erected near the *Lismore* wreck, east side of the entrance to the Wusung river. The light will be a *fixed red* light of the sixth order.

191.—CHINA.—*Yang-tse-Kiang*.—*Wusung Light*.—On the exhibition of the above light, the *red* sector of light now shown from the Wusung lighthouse will be changed to white.

192.—CHINA.—*Yang-tse-Kiang*.—The illuminating apparatus at the following places on the Yang-tse-kiang has been changed from lamps to dioptric, of the sixth order, showing *fixed* white lights—viz.: Tung-to-tu, Tantu, Bethune point, Wu-hu.

HYDROGRAPHIC NOTICES PUBLISHED BY THE ADMIRALTY.

No. 22.—*New Grenada*.—Information relating to the ports of Cartagena, Savanilla, and Santa Marta. By Captain R. Carter, R.N., 1875.

No. 23.—*Australia*.—*South Coast*.—Information respecting the currents on the south coast of Australia, and also as to cautionary measures to be adopted in approaching Bass Strait from the westward. By Staff-Commander Henry J. Stanley, R.N., Admiralty Surveyor.

No. 24.—*Eastern Archipelago*.—*Salayer Strait*.—*Pasi Island*.—Information relating to the Whale shoal. From Captain H. B. Woolcombe, R.N.

Philippine Islands.—*Savigao Strait*.—Information relating to a sunken rock, N. $\frac{1}{4}$ E., about one mile from Basol island.

No. 25.—*Torres Strait*.—*South-East Coast of New Guinea and Louisade Archipelago*.—Information relating to the navigation of Torres strait, the south-east coast of New Guinea, and the western islands of Louisade archipelago. From reports by Captain J. Moresby, R.N., and Lieutenant L. S. Dawson, R.N., Admiralty Surveyor.

CHARTS, &c., Published by the Hydrographic Office, Admiralty, to the end of July, 1875, and Sold by the Agent, J. D. Potter, 81, Poultry, and 11, King Street, Tower Hill.

No.	Scale.			s.	d.
454	m = 6·0	Jamaica :—Port Morant	... ..	1	0
0		West Indies and Central America—Index chart	... ..	0	6
1856	m = 5·7	Tenerife : Santa Cruz	... ..	0	6
81	m = 11·7	England, South Coast :—Fowey Harbour	... ..	1	6
721	m = 1·1	Indian Ocean :—Seychelle group, with Amivanti Islands, &c.	... ..	2	6
1120	various	Sardinia, South Coast :—San Pietro Channel, Pionebo and Grotto Bays, and Port Malfatano	... ..	
L		Japan Islands, Korea and Manchuria :—Index chart	... ..	0	6
2012	m = 8·0	Central America :—San Juan de Nicaragua, or Greytown	... ..	1	6

OUR OFFICIAL LOG.

At the Court at Windsor, 28th day of June, 1875.—Present: The Queen's most Excellent Majesty in Council.—Whereas by the "Passengers' Act, 1855," it is, amongst other things, enacted that, before any passenger ship shall be cleared out, the emigration officer at the port of clearance shall satisfy himself that there is on board a sufficient quantity of pure water, carried in tanks or casks, to secure throughout the intended voyage the issue of three quarts daily to each statute adult, for the use of the passengers, exclusive of the quantity required for cooking :

And whereas by the said Act it is also enacted that it shall be lawful for Her Majesty, by any order in Council, to prescribe such rules and regulations as to Her Majesty may seem fit, for permitting the use on board passenger ships of an apparatus for distilling water, and for defining, in such case, the quantity of fresh water to be carried in tanks or casks for the passengers, and such Order in Council from time to time to alter, amend and revoke, as occasion may require :

And whereas by "The Merchant Shipping Act, 1872," it is enacted that all powers and duties vested in or imposed on the Emigration Commissioners, whether acting independently or under the sanction or authority of one of Her Majesty's Principal Secretaries of State, by "The Passengers'

Act, 1855," and the "Passengers' Act Amendment Act, 1868," shall be transferred to and imposed on the Board of Trade :

And whereas Her Majesty, by an Order in Council, dated the 6th day of May, 1857, prescribed certain rules for permitting the use on board passenger ships propelled wholly by steam engines of not less than is sufficient, without the aid of sails, to propel the ship at the rate of five statute miles an hour, having on board, in tanks or casks, only half the quantity of pure water required by the said Act to be carried for the use of the passengers, of an efficient apparatus for distilling fresh water from salt water :

And whereas Her Majesty, by an Order in Council, dated the 5th day of December, 1865, prescribed certain rules and conditions for permitting the use on board passenger ships propelled by sails only, or by steam engines of less power than is sufficient, without the aid of sails, to propel the ship at the rate of five statute miles per hour, of an efficient apparatus for distilling fresh water from salt water, of the description commonly known either as Normandy's Patent, as Winchester and Graveley's Patent, or as Chaplin and Company's Patent :

And whereas it is expedient to revoke the said recited Orders in Council, and to issue in lieu thereof the Order hereinafter contained :

Now, therefore, Her Majesty doth by and with the advice of Her Privy Council, and in pursuance and in exercise of the authority vested in her by the said "Passengers' Act, 1855," hereby revoke the said Order in Council of the 6th day of May, 1857, and the said Order in Council of the 5th day of December, 1865, except in so far as the latter repeals a certain Order in Council of the 9th day of January, 1868, and doth hereby order as follows :—

Any passenger ship, whether propelled by steam engines or by sails only, or by sails and steam engines, may be cleared out and proceed on her voyage, having on board in tanks or casks only half of the quantity of pure water required by the said Act to be carried for the use of the passengers, provided that the following rules and regulations be observed, that is to say—

1. That there be on board such ship an efficient apparatus for distilling fresh water from salt water of such a description as the Board of Trade may from time to time approve.

2. That the owners, charterers, or master of such ship, before clearance, lodge with the Emigration Officer at the port of clearance, a certificate from one of the Engineer Surveyors appointed by the Board of Trade, declaring that the apparatus is in good working condition, and that within seven days immediately preceding the date of such certificate the same had been examined by him, and stating the number of imperial gallons of pure fresh water which it is capable of producing in every

twenty-four hours, and further declaring that the apparatus on board is such as has been approved by the Board of Trade as aforesaid.

8. That in every case such Emigration Officer shall be satisfied that the number of gallons of pure water which the apparatus is so certified to be capable of producing in every twenty-four hours, is a number of gallons equal to the whole number of persons about to proceed on the intended voyage of such ship, that is to say, one gallon per head for the whole number of cabin passengers, passengers, and crew.

4. That there is rated on the ship's articles, and that there is on board the ship, some person or persons who, to the satisfaction of the said Emigration Officer, shall be competent for the proper management and repair of such distilling apparatus; and to prevent all doubts on the construction of this Order in Council, it is hereby further ordered that the terms "Emigration Officer," "Statute Adult," "Master," and "Passenger Ship," shall herein have the same significations as are assigned to them in the said "Passengers' Act, 1855," and the "Passengers' Act Amendment Act, 1863," respectively, and the term "Board of Trade," shall herein have the meaning assigned to it by "The Merchant Shipping Act, 1854."

TO CORRESPONDENTS.

D. D. L., GLASGOW.—Your letter has arrived too late for insertion in this number. It will be considered next month.


CHAIN CABLES.—You complain that under the Chain Cables' Acts you cannot establish the superiority of your chains by applying a superior test. It is quite true that this is so. The test under the Act is practically a hard and fast test. If the testing system had been voluntary, a maker of good chains could, by a superior test, have proved his superiority. All you have to do now is to make your chains as cheaply as you can to pass the statutory test.

THE
NAUTICAL MAGAZINE.

VOLUME XLIV.—No. IX.

SEPTEMBER, 1875.

THE COMMERCIAL VALUE OF HUMAN LIFE.—II.

S we anticipated, the observations upon the "Commercial Value of Human Life," which appeared in the *Nautical Magazine* for July, have not failed to excite a certain amount of indignation. We are by no means surprised that this should be the case. In the few leading remarks with which we prefaced the paper referred to, we expressed our misgivings as to the reception which generally awaits those who dare to give utterance to truths of a certain character. And the style in which a Liverpool contemporary has replied to—or rather commented upon—our arguments, bears out our expectations to the very letter. We stated that those who accept certain facts as truths, must be prepared to hear themselves designated as hard-hearted, cynical, and indifferent. Our contemporary taxes us with "mercenary cruelty," and describes the view which we have taken as "specious, cold-blooded cynicism." Utterly ignoring the main points for which we contended, and for which we clearly stated that it was our sole intention to contend, it proceeds in the first place to give us credit for attempting to prove that which we never sought to establish, and in the next to overwhelm us with reproaches similar to those we have just quoted, at the same time keeping up a running fire of platitudes that are sure to be well received by the great multitude who have never troubled themselves to give five minutes' consideration to what is one of the gravest problems of the day.

What we endeavoured to place more clearly in the light, was the fact that human life must necessarily have its commercial value, and that

those who bring forward its sacredness as a plea for protective legislation of any and every kind, are assuming not only a false position, but a position that is likely to work a serious injury upon the country at large without really attaining the object for which it was intended. Against this proposition our contemporary says not a word. Calmly leaving it on one side, it rushes away to indulge in a series of declamations against the heartless cruelty of those who would sacrifice men's lives in order to fill their own pockets with gain. Ignoring the arguments which we adduced, and which in our opinion are incontrovertible, it proceeds to treat the entire question in a purely sentimental point of view. Starting from the assumption that the sacrifice of life is a terrible evil, it anathematizes all those who dare to raise a voice against the remedies that may be proposed. It would seem that it matters not how ill-advised, or how impracticable those remedies may be—that they be designed for a good end must be considered sufficient for all purposes, whether legislative or economical. Now if the question be considered solely from a sentimental standpoint, it is perhaps not impossible that our regard for the sailor may be fully equal to that of some of those who are so much given to proclaiming the fact that their reverence for human life is the one cause which impels them to take upon themselves the sailor's cause. We know full well that human life is not to be treated as a matter of little moment. We require no so-called philanthropist to assure us that its protection is one of the most serious questions that can be raised. And we also know that the sacrifice of life which takes place every year at sea is a mighty evil—an evil, we may add, which we deplore quite as deeply as some of those persons who so unhesitatingly cover us with abuse for drawing attention to a phase of the subject that in our opinion seems likely to be ignored, and for supporting a policy which we conscientiously believe to be the only one that is compatible with the well-being of the community at large. Were it possible to prevent loss of life by shipwreck, without entailing a greater evil, the man who stood in the way of interference might indeed be termed inhuman. But as we have already said, we believe this to be an impossibility. In our opinion, many of the suggestions which are being made with a view to ensuring a high degree of safety, are doomed not only to end in failure, but to prove highly detrimental to the general welfare of the country. And it must be borne in mind that from a humanitarian point of view, the mere transference of the evil that would probably follow any enactment which placed English shipowners at a disadvantage when compared with foreign, cannot be looked upon as a gain in any sense of the term.

In examining the somewhat confused string of imputations brought against us, we find that one of the main points in the charge is based on the ground that we have not been practical. In our previous

comments we acknowledged that there may be some shipowners so unscrupulous as to render interference absolutely necessary, at the same time adding that it was not *then* our intention of pointing out where that interference should begin and end. This omission seems to have given grave offence. Because we were endeavouring to prove one conclusion, we are taunted with having failed to prove another. Although we had previously stated that the main object we had in view was to make clear the fact that life must not be looked upon as priceless, we are taxed with having omitted to define the limit beyond which interference should not proceed. However, if this be an omission, it is one that may easily be rectified. In our opinion, interference should begin and end with evil-doers. The law which authorises the detention of vessels that are known to be unseaworthy, together with the punishment of those who knowingly send such ships to sea, is amply sufficient for every requirement of the case. It is at this point that we take our stand. Against all sweeping legislation—against compulsory survey and classification, and indiscriminate interference, we protest in the strongest manner possible. We believe that such wholesale intermeddling is calculated not only to fail in its intended object, but to work an unqualified injury upon all.

We are told that we have assumed that this interference would inconvenience only a small minority, whose doings matter but little one way or another, and that we have imagined a class of men who would be interfered with, although they conducted their business on sound commercial principles. We are unable to understand from what portion of our remarks this extraordinary inference is drawn. What we intended to imply was exactly the contrary. The interference which we so much deprecate, would have the very opposite effect. If all are to be interfered with, surely no imagination is required to find the honest class who would be needlessly hampered; and this part of our argument, instead of being a plea for "mercenary murder," is simply a protest against useless and meddling legislation. It is urged that if, as we admitted, there are unscrupulous shipowners, they, and they only, will be interfered with by the proposed enactments, and consequently our case falls to the ground. What then becomes of the proposals of those men who are endeavouring to stimulate Parliament into establishing a system of compulsory classification and wholesale survey? Has it not even been proposed that *every* ship should be detained on leaving harbour, in order that her photograph may be taken? In the face of all this, how in the name of reason can it be inferred that we have "imagined" a class of honest men who are to be uselessly trammelled.

To the charge that in our opinion the commercial value of human life is entirely governed by the number of lives ready to be sacrificed, and

that no necessity for sparing life will arise until there is a falling off in the supply, it is scarcely necessary to make an answer, as we said nothing of the kind. By no process of reasoning can our arguments be twisted into this conclusion. The instance of railways, which we mentioned, serves admirably to illustrate the point for which we contended. To take a moderate view of this example, we will say that at least five hundred lives are lost annually, because trains travel at a faster rate than three miles an hour. Now, if our contemporary can tell us why these five hundred lives should not be saved, without advancing some of the very reasons which we urged against the sensational legislation that is being called for, then we will allow that our case has fallen to the ground, and that we are utterly mistaken in the principles which we have adopted. Are not those five hundred sacrificed in the interests and welfare of their fellows? If not, we should be glad to hear for what purpose their lives are thrown away, for no other reason lies within the power of our imagination to conceive.

But apart from this side of the question there is a consideration of the highest importance that must not be lost sight of. Regarded from one point of view there is a close resemblance between the case of railways and that of shipping; but in another, and perhaps the more important, there is a wide divergence. The most of the lives that are lost upon English railways might possibly be saved, but it is doubtful whether the total of those lost at sea can be greatly reduced by legislative interference. If it be insisted on that all English ships shall be periodically surveyed and classified, and that no more than a certain weight of cargo shall be carried in them, can there be any doubt as to the consequences which must result from such interference. The tendency of all this could not be otherwise than to transfer English ships to foreign flags, and to drive the English carrying trade into foreign hands. We think no person who is not blinded by sympathy, or who does not refuse to look candidly at the entire question, can doubt the accuracy of this conclusion. The heavy expense that would be entailed by a system of compulsory survey would form a serious item in the working expenses of British shipowners. To have to send their vessels into dock for a period of enforced idleness, perhaps at the very moment when the opportunity of shipping profitable cargoes presented itself, would place them at an unmistakable disadvantage when compared with foreigners. In addition to this the vexatious requirements, and still heavier loss, to which they might be subjected by over-zealous officials, would be amply sufficient to turn the scale of competition in favour of the outsider. The balance is already nicely adjusted. English owners have already enough to do to hold their own. But weights like these thrown in against them would undoubtedly decide the commercial struggle. "Then perish

England's shipping as long as English lives are saved!" is the heroic motto adopted by humanitarians of thorough-going principles. But are they then so patriotically selfish as to consider the life of a German, a Dane, or a Swede, of less importance than that of one of their own countrymen? We cannot think so. We think their indiscretion is attributable to nothing more than the fact of their ignoring the laws which legislation of this description is inevitably bound to bring into operation.

We are told that we have confounded the money-making of unscrupulous owners with sound commercial policy. Here, again, we must reply we have done nothing of the sort. We have no word to say in favour of the man who over-insures his vessel, on the chance that she may go to the bottom, but still less have we been so simple as to imagine that money-making in this style is a commercial gain. What we have maintained—what we still maintain—and what we defy any person to controvert—is, that cheap carriage is a commercial gain, and a benefit which is bound to be felt by the entire community. And, believing this, we have held that all interference which tends to raise the cost of transport must, in this respect, be looked upon as a disadvantage. We have not argued in favour of the gains of fraudulent owners, but we are firm believers in that freedom which enables the honest owner to carry at the lowest rate that is compatible with a fair degree of safety, and also in retaining our immense Mercantile Marine. As to our confounding the money-making of individuals with sound commercial policy, we believe the commercial prosperity of the country is composed simply of the gains of individuals. We have never imagined that wilfully sending rotten ships to the bottom of the sea is a commercial gain, or that the doing so is at all beneficial to the general interests of the country at large, and by no possible means can such a construction be placed upon anything which we have said.

Neither have we imagined that it was proposed to turn every merchant ship into a Cunarder. In taking the case of a first-class mail steamer as an illustration of the high degree of safety which *may* be insured, we did so merely to show that safety is purely a question of cost. And does not this instance clearly prove that nine out of every ten lives that are lost at sea, are lost solely because their preservation would be incompatible with the requirements of trade? And if so, does it not also show that life must have a commercial value? We ask all those who assert that life is priceless to answer these questions before they take any further objection to the main proposition which we have advanced.

We are told that the word seaworthy is a perfectly intelligible term, and need not be quibbled about. In our opinion it is a word that is likely to be quibbled over to a considerable extent before all are agreed

as to its precise meaning. It seems to us that seaworthiness is essentially a question of degree, and is not to be easily defined. A well-found merchantman without a cargo may be as safe as a *Scotia* or a *City of Paris*. With 1,000 tons of cargo on board she would be less capable of resisting an unusually heavy storm, and with 1,500 tons she would perhaps founder in a storm of an equal degree of violence. And in the same way with vessels of varying strength of construction. Yet what man will take upon himself in cases like these to point out, to the satisfaction of everybody, where seaworthiness begins and ends. The vessel we have supposed may have been capable of carrying 1,500 tons with perfect safety through any ordinary weather. It was the exceptional storm that sent her to the bottom. Yet these exceptional storms always lie within the range of possibility; and had she been loaded with only 1,000 tons she might have arrived at her destination. Was this a case of overloading—or was this a case in which life was sacrificed to the “cupidity” of an owner who was endeavouring to earn a greater amount of freight than was compatible with the safety of those on board his vessel? Though seaworthiness is said by our opponents to be a perfectly intelligible term, we should be surprised if we received anything like a unanimous reply to this simple question.

It is now sought to impress upon those who deprecate further legislation that they have adopted a mistaken policy. They are warned that the more they obstruct interference, the more hampering will that interference ultimately become. And, indeed, it seems likely that this prediction will prove far from incorrect. The unusual but completely worked-out scene which took place in the House of Commons towards the close of the Session seems to have aroused public interest to a most remarkable extent, and the feelings with which the subject is being approached are such as to warrant the gravest apprehensions as to where legislation may now end. The fact of an honourable member standing up and apparently working himself into such a state of frenzied excitement that he could no longer be held responsible for the torrent of accusations that poured from his lips, seems to have done more towards exciting general interest and sympathy than whole volumes of debates. That the heaviest of these accusations should be without a shadow of foundation seems to be of no consequence. That a shipowner whose vessels have been well, and, possibly, truly described as “models of excellence in regard to manning, provisioning, and seaworthiness,” should be charged with wilfully sending men forth to be drowned, and that such a charge should be utterly ignored while the whole country is resounding with expressions of condolence for its author, shows only too well in what kind of spirit the question is likely to be dealt with. It would seem that exaggeration to any extent is pardonable, as long as it is exercised.

in what is supposed to be a good cause. And it is in this very fact that we see the gravest reasons for alarm. If simple and palpable truth is to be considered of no account when weighed against the so-called cause of humanity, there is indeed but little hope that reason will be of any avail. "Oh, commerce, what crimes are committed in thy name!" is the cry that has lately been heard from some of those who oppose our views. We, too, may not inaptly exclaim—"Oh, humanity, what deliberate and unblushing falsehoods are uttered in thy behalf."

The fact is, the entire subject is now being viewed through a medium of sentiment so highly coloured that its calm discussion is no longer possible. In all parts of the country, men who have no more acquaintance with shipping than with the internal affairs of China, are standing up to state what should be done, with all the assurance imaginable. They merely know that lives are being lost which *might* be saved, and there their knowledge ends. With this one fact before them they do not hesitate to stigmatise shipowners, who may have been so unfortunate as to lose any of their vessels, as murderers—as cruel and mercenary fiends. Until the question has been largely divested of false issues in the shape of this hyper-sentimentalism, there is but little chance of its being discussed with the calm deliberation which it deserves.

In our opinion, a slight extension and a vigorous application of the principle of existing enactments is all that is necessary. Section 11, of the Act of 1871, renders owners who knowingly send an unseaworthy ship to sea guilty of a misdemeanour. If this be applied to persons *attempting** to send and persons *taking or attempting* to take unseaworthy ships to sea, a few convictions under it would work wonders in rooting out the more flagrant cases of offence. And this, together with a judicious enforcement of the laws relating to the detention of unseaworthy and overladen vessels, would satisfy every requirement. But beyond this we would not go.

We know that in adopting these views we are tolerably certain to find popular sympathy arrayed against us. Yet for all that, we shall not hesitate to maintain that which we conscientiously believe to be right. To go forth in the world proclaiming some high-flown sentiment as a motto, is, undoubtedly, a safe method of catching the applause of the multitude, who never trouble themselves to thoroughly examine the great social problems that are constantly being brought forward for solution.

* We are glad to see that the "Merchant Shipping Act, 1875," does this. We are also glad to see that that Act is anti-Plimsollian throughout. It proceeds entirely on fixing personal responsibility on owners and masters. It is so good an Act that, with the exception of the excessive, dangerous and arbitrary powers vested in one-fourth of the crew, by Clause 2, it ought to remain permanent.

But applause of this description is of little real value. And, for our part, we feel confident that a careful inspection will convince all impartial observers that the two sides which are known to exist in every question, are remarkably clear and distinct in the problem connected with the administration of our Mercantile Marine.

A CURIOUS INCIDENT IN THE HOUSE OF COMMONS, AND WHAT IT LED TO.

(In order that our readers may have it in their power to refer back to the history of the last Merchant Shipping Bill, we have been at the pains to record the incidents that led up to it. Some day reason will again assert herself, and we hope that that day may come before our maritime trade is lost. It will be interesting to look back to the legislation inaugurated by "hysterical screams" in the House of Commons. In order that a correct appreciation of the facts may be arrived at, the whole of the following pages should be read.)



ON Thursday, the 22nd July, 1875, the Merchant Shipping Bill of the President of the Board of Trade was abandoned. It had been before the House since the preceding February, and respecting it the President of the Board of Trade and the Premier had been asked many questions, and had made many promises during the Session. If there was one Bill beyond any others that the Ministers had been pressed to bring forward and questioned about, it was the Merchant Shipping Bill of Sir Charles Adderley. It seems that Mr. Plimsoll had early in the Session agreed to withdraw his Bill on the understanding that the Government Bill should be pressed forward, and that he should move his Clauses as amendments thereto. It is not surprising that he should feel himself aggrieved when he found that the whole question was, as he thought, to be shelved by the Ministry in favour of an agricultural Bill, about which few people cared a straw. It had got wind that the Bill would be withdrawn, so he went to the House ready for a sensational display. He had, it would appear, made arrangements for Mr. Sullivan to take up the seaman's cause in the event of himself being prevented. Arrangements having been completely made, a scene happened as follows. It was a piece of consummate acting:—

Mr. Disraeli rose and said: "Perhaps the House will allow me at this moment to make a general statement in regard to the conduct of public business, because I felt a difficulty the other night in answering the

question of the noble lord without notice, and I also felt the same difficulty when I was pressed on a previous occasion, when I thought the time at which the question was asked was premature. The real difficulty, however, was that the Government were anxious to pass the Merchant Shipping Bill during this Session of Parliament. . . . The result which I wish to convey to the House is that unfortunately we must give up the Merchant Shipping Bill, that we shall proceed with the Agricultural Holdings Bill, then with Supply, and then with the two legal Bills."

Sir T. Bazley: "When will the Indian Budget be introduced?"

Mr. Disraeli: "I imagine from the programme I have sketched out, my noble friend will make the Indian financial statement at some time." (A laugh.)

Mr. Goschen: "As representing a shipping community, I wish to express my deep sense of regret that the Merchant Shipping Bill is not to be proceeded with. It is clear, and I hope I may say it without offence, that the Merchant Shipping Bill is sacrificed to the Agricultural Holdings Bill; and, considering the urgency of the case, the human life which is at stake, and the uncertain state in which the shipping interest is being kept on this subject, I may say that there is some reason for complaint, not that the Bill is withdrawn now, but that the arrangements of the Government have been such as to render its withdrawal a necessity." (Hear, hear.)

Mr. E. Smith rose to address the House, when

The Speaker pointed out that the proper time to continue the discussion would be when the motion was made to withdraw the Merchant Shipping Bill.

Mr. Plimsoll, who was sitting at the end of the House on the Opposition side, and who with an appearance of excitement that was a little overdone, then rose and said: "I beg to move the adjournment of the House. I earnestly entreat the right hon. gentleman the Prime Minister, not to consign some thousands of living men to an undeserved and sudden death. I believe, and do not hesitate to say, without charging the President of the Board of Trade with a breach of faith or trickery, that after the first thirty clauses of the Bill which merely related to matters of slight alteration in the law, the rest of the Bill was *so drawn* as to afford the greatest facilities for death-dealing and for hostile amendments. I adhere still to that opinion. I want the House to understand the position of this question. Since 1862 the Board of Trade have allowed matters to get worse and worse—(here the hon. gentleman spoke with studied emphasis)—and they have with the aid of shipowners of murderous tendencies outside the House, but who are amply represented by shipowners of murderous tendencies inside the House—(cries of 'Order')

—frustrated and talked to death every effort to procure a remedy for this state of things. (Cries of 'Name.') I will give names presently. I ask hon. members, if they have seen in the papers Lord Gifford's judgment respecting the ship *Bard of Avon*. If not, I advise them to read it. (Cries of 'Order.') I must and will speak out. A friend of mine has told me that he does not know of a single ship which has been broken up voluntarily by the owners because she was worn out, for thirty years. These ships gradually pass from hand to hand until they are bought by some needy and reckless speculator, by whom they are sent to sea with precious human lives on board. I have had a list carefully prepared from 15,000 vessels classed at Lloyd's. No fewer than 2,654 vessels have gone off their class and forfeited their position. And what is the consequence of this? It is that hundreds and hundreds of brave men are continually being sent to death, and their wives are made widows, and their children orphans, so that a few *speculative scoundrels*, in whose breasts there is neither the love of God, nor the fear of God, may make unhallowed gains. (Hear, hear, and 'Oh.') There are shipowners in this country, who have never either built a ship, or bought a new one, but are simply what are called '*ship-knackers*'; and accidentally I overheard a member of this House described by an ex-Secretary to the Treasury as a *ship-knacker*." (Cries of "Oh" and "Order.")

The Speaker: "I must point out to the hon. member that his speech—or the greater part of his observations—have reference to a Bill which is set down for consideration this very day. His observations would be quite in order if made on the order that that Bill be discharged; but he is not at liberty to discuss, on a motion for adjournment, the merits of any Bill which is before the House." (Hear, hear.)

Mr. Plimsoll, whose manner was such as to convey to the House that he was getting more and more excited, said: "Then, Sir, I give notice that on Tuesday next I will put the following question to the President of the Board of Trade. I will ask the hon. gentleman whether he will inform the House as to the following ships, the *Thetis*, the *Melbourne*, the *Norah Grey*, all lost in 1874, with eighty-seven lives, and the *Foundling* and the *Sydney Dacres*, abandoned in the early part of this year—representing in all a tonnage of 9,000 tons—and if he will tell the House whether the registered owner of these ships is Edward Bates, the member for Plymouth, or some other person of the same name—(loud cries of 'Order' from the Conservative side, and ironical and loud cheering and laughter from the Liberal side)—and, Sir, I will ask some questions about members on this side of the House also. (Laughter on the Conservative side, and severe cries of 'Order' on the Liberal side.) I am determined to *unmask the villains* who send to death and destruction"— (Loud cries of "Order" on both sides, in the midst of which

Mr. Plimsoll left his seat, and walking up to the table, stood in the middle of the floor, facing the Speaker : he then went towards Mr. Disraeli, and shook his clenched fist at a few feet from Mr. Disraeli's nose, and having done that shook his fist at the other side of the House. Mr. Disraeli sat as still as the Sphinx and was not in the least moved or surprised. There was great uproar, and when it had subsided and the hon. gentleman had sat down)—

The Speaker rose and said : " I presume it is not intended that that expression is to be applied to any member of this House." (Hear, hear.)

Mr. Plimsoll : " I beg pardon ? I don't hear ; I am a little deaf."

The Speaker : " The hon. member made use of the word '*villain*.' I trust he did not mean to apply it to any member of this House." (Hear, hear.)

Mr. Plimsoll, again advancing to the middle of the floor, and waving his arms excitedly : " I did, Sir, and I don't mean to withdraw it. (Cries of ' Oh,' ' Order,' ' Withdraw,' and general excitement.) No, no, I won't withdraw." (Renewed cries of " Order," and excitement.)

The Speaker (who meanwhile had been standing and trying to restore order) : " I think I heard the word '*villain*.' I presume the hon. member does not intend to apply it to any member in this House ? "

Mr. Plimsoll : " Yes, I do ; and I don't mean to withdraw it."

The Speaker : " The observations of the hon. member are altogether unparliamentary ; and I must call upon him to withdraw them." (Hear, hear.)

Mr. Plimsoll : " And I must again decline." (Laughter, and loud cries of " Order.")

The Speaker : " Does the hon. member withdraw that expression ? "

Mr. Plimsoll : " No, Sir, I do not." (Sensation.)

The Speaker : " I must again call upon the hon. member to withdraw it." (Loud cries of " Withdraw.")

Mr. Plimsoll : " I decline, and I must be allowed to say "—— (Loud cries of " Order.")

The Speaker : " If the hon. member does not withdraw his expression, I must submit his conduct to the judgment of the House." (Hear, hear.)

Mr. Plimsoll, defiantly : " I shall be happy to submit to the judgment of the House, and this is my protest." (Loud cries of " Order.")

The hon. gentleman then advanced and threw a document on the table, immediately afterwards retiring, and taking a seat below the gangway on the Opposition side of the House. Someone inside the Ladies' Gallery, at this moment, dropped copies of the Protest to the reporters. It was now quite clear to lookers on that the whole incident had been carefully arranged.

Great excitement followed in the House, and in the midst of it Mr. Dodson moved towards the hon. member, and addressed some words to him, apparently with the view of appeasing his excitement.

Mr. Disraeli, who with the Speaker seemed to be the only calm persons in the House, then rose and was received with cheers. He said: "I rise, I confess, with great pain, and I have no doubt a similar feeling will be experienced by every member of this House—(hear, hear)—that a brother member should have conducted himself in a manner almost unparalleled." (Hear, hear.)

Mr. Plimsoll: "And so has the Government." (Cries of "Order," and very great excitement.)

Mr. Disraeli: "It is my duty to maintain, so far as I can, the dignity of the chair, and the honour of the House and all its members; and I think the conduct of the hon. member cannot be passed unnoticed. (Hear, hear.) It is of the most violent and offensive kind, and although I do it with great reluctance, I feel I am only expressing the sense of the whole House when I say that this is a case in which you, Mr. Speaker, must exercise one of your highest duties, and that is, that you should reprimand the hon. member for conduct so disorderly and violent as that of which he has just been guilty—(hear, hear)—and I beg accordingly to move that the hon. member be reprimanded." ("Order.")

The Speaker: "The motion before the House is that Mr. Speaker do reprimand the hon. member for Derby."

Mr. Plimsoll rose and waved his arms, and again attempted to address the House, but was called to order, and observing the Speaker standing, he said, "I beg pardon, Sir," and sat down.

The Speaker: "According to the practice of the House, the hon. member should be heard in his place and then withdraw." (Hear, hear.)

Mr. Plimsoll hereupon left his seat, and hurrying down the floor, pushed his way through the crowd of hon. members who stood at the bar, nearly upsetting two of them, waving his hands as if defying the Ministers, and crying out at the top of his voice, "You know that thousands of men are dying for this." (Sensation, in the course of which the Marquis of Hartington rose, but gave way to the Speaker.)

The Speaker: "The motion is that the hon. member for Derby, for his disorderly conduct be reprimanded by Mr. Speaker from the chair."

The Marquis of Hartington: "I need hardly say—speaking on behalf of members on this side of the House—that, if necessary, I will support the motion of the right. hon. gentleman at the head of the Government. (Hear, hear.) I rise, however, with great diffidence—feeling that I am not sufficiently acquainted with the forms of procedure of the House—to venture to make a suggestion. It is quite evident that the hon. member for Derby, in the observations he has made, has been labouring under

feelings of very strong excitement—(hear, hear)—and although I cannot—and no one could for a moment desire to—entirely justify the language of which he has made use, I cannot help thinking that it would be very much to the advantage and dignity of our proceedings if action in this matter could be postponed for a short period—(hear, hear)—when I have no doubt, and, in fact, have great reason to hope, that the hon. member for Derby may be induced to see the impropriety of his conduct. (Hear, hear.) Therefore, if it is possible that this discussion can be adjourned for a short time, I think it would be very much to the interest and dignity of the House that this should be done.” (Hear, hear.)

Mr. Sullivan, entering the House, and taking the place lately vacated by Mr. Plimsoll below the gangway, rose, and speaking with emotion, said: “The House has listened to and witnessed a scene I believe without a precedent in the annals of this assembly; and, Sir, it is not with the slightest view, as a friend of Mr. Plimsoll—(‘Order’)—I mean the hon. member for Derby—and as one who came here to-day *I avow in concert with him*, to support his views on this question—of justifying what he has said; but I appeal to the House to be as considerate and as indulgent to him as they can under these circumstances. I am personally aware that the hon. member is at this moment extremely ill. (Hear, hear.) I do not wish to go closer into the matter than to express my own opinion, formed after very close intercourse with the hon. member within the last two days, that his mental excitement from an overstrained, and, as I think, very sensitive temperament, has placed him in a position of agitation on this subject which I hope will command from this assembly a friendly and generous consideration for his transgression, which I don’t attempt to justify or palliate—(hear, hear)—and I feel that my hon. friend for whom I speak at this moment, in the serious position in which he has placed himself—that if he could have the calm and retirement of a week he would be the first to upset what he has done in so far as is a transgression of the good order and forms of this House, and of the sacredness of the duty which he owes to the members of this House individually. I hold in my hand documents that, if read—but I will not use—could account in some degree for the pitch of excitement to which we have seen him brought to-day. (‘Oh.’) I have no idea of making the case of the hon. member worse than it is by going into any matter that could hurt the susceptibility of any hon. member. I only plead this for him—that his is a nature eminently unselfish, and that, though in this I think his conduct most unwise, I do believe that if we knew the deplorable results of the painful excitement which has been going on in the mind of the hon. member, and which has led him into a condition that has given rise to the most serious uneasiness to hon. members who, like myself, have been enjoying his confidence for these

few days past—I will not compromise the honour of the hon. gentleman by saying that even if taken to the scaffold, he would retract one word said by him in his calm mind and deliberate judgment; but, under the circumstances, I think if he were allowed a few days' rest the hon. gentleman will set himself right with the House." (Hear, hear.)

Mr. Disraeli: "Under the circumstances detailed by the hon. gentleman opposite, the friend of the hon. member for Derby, I think the best course we can take is that he should be requested to attend in his place on this day week. (Hear, hear.) I beg to move accordingly."

Mr. Fawcett, who was received with cries of "Oh," and "Agreed," said: "As I knew the hon. member for Derby before he came into this House, I hope hon. members will not think I was adopting an unusual course—in the state of excitement in which the hon. member is—by going and having a conversation with him. I can quite confirm what has been said by my hon. friend the member for Louth (Mr. Sullivan) that he is in a state of excitement extremely painful; and nothing could be more kindly to him, and more likely to conduce to the dignity of the House than the course suggested by the Prime Minister—namely, that he should not attend in his place for a week. (Hear, hear.) I found him in a state of unusual excitement in the lobby, and gave him the advice I thought best. After considerable difficulty I persuaded him to take a walk in the open air. (Hear, hear, and laughter.) The hon. member will have an opportunity in the course of the week of consulting with his friends, and I am sure that between then and now the hon. member, who is not unreasonable—although I have no authority to speak in his name—I am sure the hon. member will come to regret as much as any of us the expressions which he used, and which none of us can justify or uphold." (Hear, hear.)

Mr. Bass, who was also received with cries of "Agreed," said: "As the colleague of the hon. gentleman, and one well acquainted with his excellent qualities, I trust the House will permit me to offer my grateful acknowledgments to the Prime Minister for the considerate course he has consented to adopt." (Hear, hear.)

The motion for the adjournment of the debate for a week was then agreed to.

MR. PLIMSOLL'S "PROTEST."

The following is a copy of the "Protest" thrown on the table by Mr. Plimsoll, and dropped into the Reporters' Gallery from the Ladies' Gallery: "I protest in the name of God against any further delay in proceeding with the Shipping Bill. The Bill itself is an atrocious sham, but there is enough humanity and knowledge in the House of Commons to change it into a good measure. At this moment there are 2,654 ships afloat

which have run through their classes like the *Bard of Avon*, and yet at this moment any of the owners, captains, mates, ship's husbands, and consignees of those ships may without warrant arrest British subjects who, having carelessly agreed to sail in them, find when too late that the only alternative before them is gaol or death. I charge the Government that they are, wittingly and unwittingly—for there are both—playing into the hands of the maritime murderers inside the House and outside the House, to secure a further continuance of the present murderous system. What is demanded by humanity is that rotten ships should be broken up or repaired; that ships should not be overloaded; that grain cargoes should not be carried in bulk, so as to expose the lives of those on board to deadly peril; and deck cargoes, the source of unutterable agony to many and death to so many more, should be put an end to. The Government Bill provides for none of these things; it provides only heavier penalties and severer punishments against our unfortunate fellow-subjects whose necessities take them to sea. I desire to unmask the villains who sit in the House, fit representatives of the more numerous, but not greater, villains who are outside the House, and in the name of our common humanity, I demand that this Bill shall be proceeded with immediately, as the report on the Agricultural Holdings Bill will send scores of county members out of town, members who, to a man, would support the cause of justice, humanity, and mercy, and thus leave to the Government and the shipowners the power to prolong the horrible state of things which now exists. In the name of the God of all justice and of all mercy I protest against any further delay. I demand that the Merchant Shipping Bill be proceeded with from this hour *de die in diem* until through Committee, and, failing this, I lay upon the head of the Prime Minister and his fellows the blood of all the men who shall perish next winter from preventable causes, and I denounce against him and against them the wrath of that God who has said, 'Ye shall not afflict any widow or fatherless child. If thou afflict them in any wise, and they cry at all unto Me, I will surely hear their cry, and My wrath shall wax hot, and I will kill you with the sword, and your wives shall be widows, and your children fatherless.' How much hotter, then, shall be His indignation and wrath against those who reduce unhappy women and children to that deplorable condition, and who leave their own fellow-creatures, guilty of no crime, to a violent and sudden death!"

The preparation of the Protest, the distribution of copies of it to the newspaper reporters by an agent in the Ladies' Gallery, and various other incidents, clearly show that this outburst was carefully preconceived as a means of re-awakening the interest of the people in a topic they were getting tired of. We sincerely congratulate Mr. Plimsoll on the success

of his scheme, although we by no means approve of the personal attacks he made on members and on the Ministry. It was given out, by paragraphs in the next day's papers, that Mr. Plimsoll was so knocked up as to be a source of considerable alarm to his family and friends, and that he had gone to Hastings with Mrs. Plimsoll for a week's rest. The truth being, that he was at the House at, or about, ten o'clock next morning, and did not appear to be an invalid.

On Wednesday, the 28th July, owing to severe pressure and agitation throughout the country, Sir Charles Adderley obtained leave to bring in another Bill, "a Stop-Gap," which is now the Merchant Shipping Act 1875, and on the 29th July, Lloyd's Register had an advertisement in the *Times* of two columns and a quarter, from which it appeared that no ships are to be deemed to be classed that are not classed in Lloyd's register. The attempt has all along been made to drive ships compulsorily into that Register.

On Thursday, the 29th July, the day appointed for the reprimand, Mr. Plimsoll had arrived at good health, and attended the House, and rose and said, in firm, quiet language: "Sir,—It did not take me the whole week so generously accorded to me by this House to perceive that it would be impossible to conduct the Government of this great country, impossible to maintain its honour and influence abroad, or the dignity and authority of this House at home, unless its debates were conducted within strict limits. (Hear, hear.) I exceeded these limits on Thursday last. This being so, patriotism and common sense, and, I may add, right feeling, alike demand that I should withdraw such terms and expressions as have transgressed Parliamentary usage—(cheers)—and apologize to you, Sir, and to this House for using them; and this in no grudging or reluctant spirit, but frankly and sincerely. (Renewed cheering.) This I now do, Sir, and hope that you and the House will accept my apology. (Cheers.) I trust, Sir, it will not be considered inconsistent with that respect which I feel for and have now expressed to this House if I add that I do not withdraw any statement of fact. I now submit myself to the judgment of the House." (Cheers.)

Mr. Plimsoll then left the House.

Mr. Disraeli rose, and in concluding his observations said: "I am—as I am sure we all are—deeply gratified that we have seen the hon. gentleman in his place, restored, I am happy to believe from his tone and bearing, to that state of temper which becomes all who are members of this assembly—(hear, hear)—and I think I may express the general feeling of both sides of the House that they receive the statement which he offered to us as a complete and satisfactory apology for what was, no doubt, in ordinary circumstances, a great indiscretion. (Cheers.) The sentiments so expressed have been, I am sure, offered by the hon. member

for Derby in sincerity—(cheers)—and I trust they will be received with kindness. (Renewed cheering.) And, therefore, Sir, I take this, the earliest opportunity, of moving that the order which has been read be discharged. (Cheers.)

The order was discharged.

As Mr. Plimsoll did not withdraw any statement of fact, the imputation, of course, remained against the shipowners in the House.

On the 30th July, when the Stop-Gap Bill was brought in, Mr. Bates, who had on the 22nd fully exonerated himself, again rose and made a manly, straightforward, honest, and convincing statement, which entirely refuted everything that Mr. Plimsoll had insinuated against him; and Mr. Plimsoll, apparently in full health, followed Mr. Bates, and made a very calm and, for him, a very proper speech on the Merchant Shipping Bill. Everyone was pleased to hear Mr. Plimsoll's voice so firm, manly, and healthy. He, however, and we record it with regret, never made the slightest reference to Mr. Bates who had preceded him, but wound up his speech thus—

“Only the other day five men were found at sea, of whom two were dead and three had lived on the others. Even the millions of property that would be saved every year is a consideration. I ask this House, therefore, to put down its foot firmly on the attempts so often made in order to check the proposals of the Government by what is called ‘talking against time.’ (Ministerial cheers.) Mr. Speaker, the shipowners have known this state of things to have existed, more or less, all this time, and have never opened their mouths to ask for any legislation, but since legislation has been proposed they have invariably talked the remedial proposals to death with a view to obstruct. Is that not true, Sir? (‘No, no.’) I say, Sir, that is true. (Cheers.) I will not enlarge upon the point, for the cheers of the House assure me they will no longer tolerate anything of the kind; therefore I will not occupy more time, but will only thank the House for the patient hearing that has been given me.” (Cheers.)

Mr. Plimsoll who has violently and personally attacked some men in every way his equals and many ways his superiors, is always tender when his own conduct is referred to, as the following will illustrate:—

Mr. Bentinck (not the energetic and learned colleague of Sir Charles at the Board of Trade, but “Big-Ben”) regretted that the hon. member for Derby had made no attempt to substantiate his charges against the hon. member for Plymouth.

Mr. Plimsoll: “I rise to order. Have the hon. member's observations any connection with the subject before the House?”

The Speaker: “The observations of the hon. member are relevant to

the subject before the House. (Ministerial cheers.) The hon. member is therefore quite in order." (Hear.)

Mr. Bentinck resumed. The hon. member for Derby had given no notice of his intention to proceed with his charges, and he only hoped that the hon. member for Plymouth would persevere with his defence and move for a Committee.

Regret was universal that Mr. Plimsoll had not felt himself bound to apologise to Mr. Bates.

The New Merchant Shipping (Stop-Gap) Bill, 1875, was brought in by Sir Stafford Northcote, Mr. Disraeli, and Sir Charles Adderley. It was, therefore, received by the country as a measure of the Premier. The Bill withdrawn was Sir Charles Adderley's Bill, and the Board of Trade is not represented in the Cabinet. It is regarded by many gentlemen as a serious state of things that the Marine Minister of the greatest maritime country in the world is not a Cabinet Minister: and it is likely to lead to very serious steps being taken next Session to secure a Ministry of Commercial Marine. On the second reading of this Merchant Shipping Bill, which took place on the 30th July, Sir Charles Adderley, the President of the Board of Trade, did not once open his mouth.

On the 31st July, the House unanimously passed a resolution on the motion of Mr. E. J. Reed—"That in the opinion of this House, no stain rests upon the character of the honourable member for Plymouth, in consequence of statements made in this House by the hon. member for Derby."

It is to be remarked, by way of parenthesis, that more time has been occupied in personal matters in the House than had been devoted to the Merchant Shipping Bill.

On the 4th August, Mr. Disraeli made a speech at the Mansion House, in which the following passage occurs—"My Lord Mayor, there is another subject which of all the measures with which Her Majesty's Ministers proposed to deal this Session I can unaffectedly say is most interesting, and that was the Bill which we introduced with respect to the Mercantile Marine of England. (Cheers.) There is no Bill to which we gave more consideration, more pains; but its success from the first was doubtful. When it was launched it did not glide into the current of the waters with that grace and facility which constitute a happy omen. Sometimes it was crank, sometimes I almost felt it was water-logged. (A laugh.) I know not what to attribute this to. Certainly it was not attributable to Her Majesty's Government, who gave it their utmost pains and thought. But so it will sometimes happen. Whether it was the activity of the Opposition, which, as an Opposition, is bound to be active, or whether it were, what I most deplored at the time, the in-
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ference of the public, it made no way. There is no Bill to which individually representing the Government I more adhered ; but when, on the 22nd July, I found on the paper 178 amendments to that Bill, of which 140 were proposed by the Opposition—(cheers)—and that in many cases on subjects of great difficulty, of great importance, and of great intricacy, I felt, on the part of the Government, it was my duty, pressed on all sides, as was perfectly natural, at such a season for some estimate of the course of events—I felt it was my duty to recommend that we should not proceed with the Bill. (Hear, hear.) It was said at the time by those good-natured critics that abound in all assemblies, which are to be met with even perhaps in this hall, and are certainly sufficiently abundant in the House of Commons, that we sacrificed that Bill to the Agricultural Holdings Bill to which I have adverted ; but that was by no means the case. Had we attempted then to proceed with the Mercantile Shipping Bill we should have sacrificed both Bills. That was the situation. I say that anyone who is competent to form an opinion, anyone who estimates the difficulties of the case, must agree with me in that opinion. But when we made up our minds that we could not proceed with that Bill, Her Majesty's Government did not lose an hour to consider which was the best course to take under the circumstances—to effect that which was alike necessary for the public weal and also in the public opinion which is a guide to the public weal. It is generally supposed by those whose feelings are, perhaps, warmer than their judgment is sound, that there was no legislation in existence to secure the lives of our brave mariners ; but the state of the law as it then existed was one highly favourable to this object. We cannot claim the merit of passing those laws ; they were passed by our predecessors. I do them that justice. There was more than one Act, but especially the Act of 1873, by which great powers were given to the Government to prevent those horrible catastrophes which have occurred, and which might be attributed in some instances to causes beyond the control of Government. The powers intrusted to Government by the Act of 1873 were enforced, and have exercised a most beneficial influence and accomplished most advantageous results already. While then giving up our Bill we thought under this Act of 1873 something might still be done, and much might be done, to give energy and power to the administration. We lost no time in considering that subject. It did appear to us that by increasing the staff of the Government, by issuing afresh more stringent instructions, instructions more adapted to the circumstances and the information of the hour, we could have produced results highly satisfactory to the country. I think it was on the Monday that I announced that the Govern-

* Mr. Disraeli was not correct in this statement, and he afterwards rectified it in the House of Commons. It was on Thursday that he announced the withdrawal

ment would withdraw the Bill, but the Cabinet was to meet on the Wednesday, and—if I may presume to speak of Cabinet secrets—it would have to consider this matter. But in consequence of that dramatic scene which occurred in the House of Commons, which had a beneficial effect in eliciting some public sentiment which we had for six weeks looked for in vain, I asked them to assemble, and they unanimously agreed that we should ask for some further statutory powers, which we, on investigating the subject, found were necessary to give effect to the arrangements we were then contemplating. That is the real history of the Bill which we brought into Parliament. It had two clauses only, somebody said. If I had my way entirely it would only have had one. I felt the importance and the urgency of passing the Bill. The Bill was introduced, and the feeling of the country was so great that it assisted what was the policy of the Government, and we were enabled to do that in ten or twelve hours which otherwise we could not have done in ten or twelve days. We have been successful. (Cheers.) I am of the opinion still which I expressed in the House of Commons, that if you are to deal with our Mercantile Marine permanently your measure must be comprehensive and complete. It must touch every branch of the question, and therefore, when I am asked ‘why did you not bring forward a Bill of the present character at once,’ I say it is quite clear that unless there had been that ebullition of popular sentiment it would have been utterly impossible for any Government to succeed at this moment in carrying a measure which would have been effective, which would have satisfied the country and would have accomplished some of the ends of the Government. I have been sneered at by what I call political sceptics, because in the House of Commons I said it was not under the pressure of public opinion, but by the aid of public opinion, that we carried this measure; but I repeat the observation because it is the truth. The *vox populi* did not coerce us, but assisted and aided us. A few weeks ago, being asked in the House of Commons to inform its members what would be the course of public business, I said when we had got through the •Committee on the Agricultural Holdings Bill I proposed to proceed with the Committee on the Merchant Shipping Bill. That announcement was received with silent scepticism, and apparently there never was an announcement which encountered more complete discomfiture. But what are the facts? It was a prophecy, not a mistake. (Cheers.) The moment we had finished the Committee on the Agricultural Holdings Bill, the House of Commons and the country allowed us to proceed

of the Bill—the Thursday of Mr. Plimsoll’s “hysteric screams;” and it was on the next Monday that Sir Charles Adderley moved for leave to bring in the “Stop-Gap” Bill, which he brought in on the next Wednesday, the day before Mr. Plimsoll was to be reprimanded.

with the Mercantile Marine Bill, and it is virtually passed at this moment to the satisfaction of the country." (Cheers.)

We think Mr. Disraeli is a little hard on the Opposition; some of the members of Mr. Disraeli's own party were active opponents. Mr. Hammond and Mr. Bates over the clause as to the advance-note system, the really good clause in the first part of Sir Charles Adderley's Bill, when Mr. Lefevre, Mr. Norwood, and Mr. Hugessen supported the Government. Mr. MacIver was a most active opponent; he proposed to leave out almost every clause in the Bill except clause 1. Two clauses, one to prevent the transfer of rotten English ships to foreign flags, and the other to prevent the transfer of rotten foreign ships to the English flag, were marred and lost, certainly not through the Opposition party in the House.

The *Times*, in referring to Mr. Disraeli's speech at the Mansion House, remarks that:—

"Mr. Disraeli began his speech by boasting that he and his colleagues had been called to office to give effect to the will of the people; yet, he so mistook the people's will that he misapprehended its purport, until an 'inspired idiot' arose to tell him what it demanded. We do not like this state of affairs. But it would be much worse than the fact itself, to affect to misunderstand the fact." And, again, "What is to be said of Mr. Disraeli's attempt to take credit for his Government in passing this Stop-Gap measure? According to his own account, he was longing for the outside help, that was necessary to overcome the obstacles put by interested members of the Opposition in the way of the legislation he was eager to promote, and he joyfully availed himself of the impulse which Mr. Plimsoll's escapade brought to his assistance."

The Stop-Gap Act, which is really an important measure, now differs immensely from its first appearance, and will be found in our present number with our remarks on each clause. It is chiefly valuable as containing the substance and intentions of many clauses, dug out and revived from Sir Charles Adderley's own abandoned Bill.

Mr. Plimsoll's next appearance was in the *Times*, in which he published a letter to Sir Charles Adderley, instructing him as to the number of persons he should appoint under the new Act, and what they should do. He also made grave charges therein against Mr. Farrer and Mr. Gray, whom he accused of the most scandalous misconduct in their official duties, stating at the same time that he would, "if desired, lay convincing proof" before Sir Charles "of the truth of" his statement. Sir Charles Adderley asked for that "proffered convincing proof": whereupon Mr. Plimsoll declined to give it, and turned round and abused Sir Charles Adderley. Sir Charles replied upholding his officers. It will be recollected that Mr. Plimsoll had made grave charges during the time when Mr.

Fortescue was President, and then, as ignominiously, was compelled to withdraw them. Lord Carlingford referred to this in his speech. It is the practice of Mr. Plimsoll to make charges that he never goes on with; to place notices on the papers of the House implying suspicion and to leave them there. It is not possible that persons accused in that way can vindicate themselves. But this is how he has got his popularity, and the sympathy of the public is *with* him.

On the 9th August the Stop-Gap Bill was read in the House of Lords.

UNSEAWORTHY SHIPS BILL.

The DUKE [OF RICHMOND, in moving the second reading of this Bill, said: "Her Majesty's Government feels strongly the necessity of dealing with this subject. They have so felt for some period, believing that few subjects which come under the attention of Parliament require more careful consideration. I do not pretend that Her Majesty's Government monopolizes the feeling of interest which undoubtedly prevails on this subject. On the contrary, I am satisfied there is no member of your lordships' House who will not desire to carry out as far as possible, by restrictive powers, the object contemplated by the Bill—namely, to maintain and preserve our ships in a seaworthy condition, and also to give confidence to the crews of our merchant shipping. Before going further, let me call attention to what has been done in the past, so that the public may not imagine that only now for the first time has the attention of Parliament been directed to this important subject. So long ago as 1855, after the passing of the Merchant Shipping Act of 1854, the opinion of the Law Officers of the day was taken as to whether a seaman, being called upon to sail in an unseaworthy ship, could plead this as a reasonable cause for not being compelled to form part of the crew. As might be expected, the Law Officers answered in the affirmative, and their opinion was made as public as possible by the Board of Trade at that period. Some years afterwards a circular was issued by Sir George Grey, who invited the magistrates of seaport towns to call in the surveyors of the Board of Trade in all cases where complaints were made by seamen against the unseaworthiness of ships. More recently Bills have been prepared by various Governments. When I was at the Board of Trade I had a measure under consideration, and the right hon. gentleman (Mr. Bright) afterwards had a measure under his consideration, but these Bills were not passed. The subject was next taken up in 1871, when a measure was introduced and passed by the noble lord opposite (Lord Carlingford). I merely mention these facts to show that stringent Acts of Parliament have been adopted with a view to

better the condition of seamen, and that the idea is not now a sudden one. Among other provisions which the Act of 1871 contained in the interest of seamen, were three of great importance. First, one-fourth of the seamen charged with desertion might call upon the Court to have the ship surveyed by the Board of Trade surveyor. Secondly, the Board of Trade were empowered to detain unseaworthy ships. Thirdly, the Act made it a misdemeanour to send ships to sea in an unseaworthy state ; it required a record of the draught of water both on the stem and stern of the ship, and it gave power to the Board of Trade to require that records of these facts should be made known. In 1872 the attention of the magistrates was called to the provisions of the Act in a very distinct manner in a circular issued by the Home Secretary (Lord Aberdare). In the winter of 1872-73 there appeared a remarkable book which was written by Mr. Plimsoll, a member of the other House. This book attracted considerable attention, the result being that Her Majesty, on the recommendation of the then President of the Board of Trade, the noble lord who sits opposite, issued a Royal Commission to inquire into the subject. The Government of the day were so anxious to deal with the matter that they did not follow the usual course of waiting till the Royal Commission had reported, but in the year 1873, while the Commission was sitting, an Act of Parliament was passed which gave the Board of Trade very much more stringent powers than had been conferred by the Act of 1871. After referring to the provisions of the Acts of 1871 and 1873, His Grace went on to say, with regard to the loss of life which has been so frequently referred to in the debates and discussions on this subject, and which we all so deeply deplore, I may remark that nothing can be more fallacious and illusory than the returns of the number of persons who perish by the losses of ships at sea. The reason of this is, that you cannot get at a proper average of deaths. You cannot show that the number of deaths has been in any way caused by the unseaworthiness of the ships, because a lamentable loss of life is caused by the going down of large vessels which are not unseaworthy, and which, moreover, have been surveyed before they proceeded on their voyages. I need only refer to the instances of the *Vicksburg*, which struck on an iceberg ; of the *Schiller*, which went upon the rocks near the Scilly Islands, and of the burning of the *Cospatrick*. I think it is but fair, in the interests of the officials of the Board of Trade who carry into effect the provisions of the law, that I should bring these facts under your Lordships' notice. One remarkable fact, showing the manner in which those officials put in force the provisions of the law, is to be found in a Parliamentary return, granted in the present year, of the vessels ordered to be surveyed by the Board of Trade. I find that out of 550 ships surveyed between the 5th of August, 1873, and the 30th of June, 1875, no fewer than 505 were surveyed in consequence of reports made by

Government officers, leaving, therefore, only 45 ships which were reported by other persons. (Hear, hear.) Having thus endeavoured to show the interest which has been taken in this matter by former Governments, I come to the Bill introduced by Her Majesty's present Government in the early part of this year. I may say that Bill was based mainly, if not altogether, upon the recommendations in the Report of the Royal Commission. It was framed with the view, as we hoped and expected, of meeting all the necessities of the case, and I think I am justified in saying that the failure to pass that measure is not wholly attributable to any fault or *laches* on the part of Her Majesty's Government. The failure is to be attributed more to the magnitude of the subject. With the most unfeigned regret, therefore, we felt ourselves obliged to withdraw that measure. But at that time we did consider whether by conferring additional powers like those given under the Act of 1873, it would be possible to mitigate some of the evils which may be expected during the coming winter, and whether it would not be possible by increased restrictions to deal with the subject. We did not believe we could do that in a very satisfactory manner, and circumstances arose to which I need not further allude at this moment. We believed that it was possible and necessary to bring in a short Bill which should be temporary in its character, and which would meet some of those evils and some of those disasters to which it is our hope and desire to put a stop. Therefore, we brought in the Bill to which I shall presently ask your lordships to give a second reading. There were four other points that were suggested during the passage of the Bill in the other House of Parliament—namely, first, deck cargo; second, grain cargo; third, load-line; and fourth, survey. As to the first, the proposal to deal with the question of deck cargo was rejected on a division in the other House. The question of survey was dropped. The other two points—viz., grain cargo and load-line—are dealt with by this Bill. As to grain cargoes, this Bill provides that not more than one-third of the cargo of a British ship shall consist of grain unless such cargo shall be carried in bags, sacks, or barrels, or be secured from shifting by boards or otherwise; and that for an offence against that provision a penalty not exceeding £200 may be inflicted. With regard to load-line, an important provision is inserted in this Bill. The 9th Clause gives to seamen a remedy for any loss they may sustain from a ship having been sent to sea in an unseaworthy condition. The last Clause provides that this Bill shall be in force until the first of October, 1876. That provision indicates that this Bill is to be regarded as a purely temporary measure, and it is an earnest of what Her Majesty's Government intend to do during the recess—namely, to take the whole subject into their consideration, and if possible bring forward a measure which may be of a permanent character, and

which will deal with this very important subject in a satisfactory manner. I move that the Bill be now read a second time."

LORD CARLINGFORD wished it to be understood that the amendments of which notice was given in reference to the original Bill of the Government, and which had been put forward in justification or explanation of its withdrawal, though placed upon the paper by members of the House of Commons who sat on the Opposition side, were not brought forward as a matter of Opposition policy. As a matter of fact the shipowners in the House of Commons, with a few exceptions, sat on the Opposition side of the House, as did also Mr. Plimsoll, who was responsible for a great number of the amendments, and who desired to convert the measure of the Government into a Bill of his own. On the whole he thought the present Bill a more rational and respectable measure than was to be expected from the circumstances of its origin, and its advent was therefore to be welcomed, although it came late in the Session. The measure was based upon the sound policy of exercising such a system of police in reference to shipping as should prevent unseaworthy ships going to sea, and in the end weed out all such vessels as were likely to bring about the loss of life if allowed to be sent to sea. On the general question he could not help thinking that Mr. Plimsoll was to blame for not having either justified, qualified, or retracted the sweeping charges which he had brought against certain shipowners and against the permanent officials of the Board of Trade. (Hear, hear.) The noble lord adverted to the legislation of 1871 and 1873, and pointed out that the present Bill was almost entirely on the same lines. The surveyors clause had been regarded as an alarming innovation, but it was nothing more than an extension of machinery which was already in existence. Under that clause the Surveyor of the Board of Trade would have the power of stopping vessels on the same ground only as the Board of Trade could stop them now—the ground, namely, that they could not proceed to sea without serious danger to life. As supplementary to the Acts of 1871 and 1873, he believed the present Bill would be found very useful. It contained no violent proposition, and he saw no reason why a great part of it should not occupy a permanent place in the Statute Book. At the same time he hoped it would not be understood that because Mr. Plimsoll had called public attention to an existing evil his proposals for checking that evil were to be taken as a guide or as an authority in future legislation. (Hear, hear.) On the whole he thought their lordships might congratulate themselves that a rational measure had come out of the recent confusion and excitement, and that a whole year had been gained in the passing of provisions which were calculated to diminish the loss of life at sea. (Hear, hear.)

The DUKE OF SOMERSET, having been Chairman of the Royal Commission

which had been referred to, wished to say a few words to their lordships, and they should be very few. He was sorry this subject had been brought forward in the last days of the Session, and especially that it had been brought forward in a somewhat sensational manner, partly promoted by meetings out of doors, and partly by the hysterical screams of a member of the House of Commons. (Hear, hear.) The Act of 1873 did undoubtedly give great powers to the Board of Trade, and it had worked very well for the country. No doubt it gave the means of stopping unseaworthy ships, and the officers of the Board of Trade told the Royal Commission that they had no difficulty in stopping such vessels, telegraphing to the Board that they did so. That looked like an arbitrary power, for it seemed as if gentlemen sent round the coast had an absolute power of stopping ships, only reporting the fact to the Board of Trade. That was a great power, and when they considered what the tonnage of our Mercantile Marine was—that it was larger than the tonnage of all other mercantile nations—it was of the greatest importance that such powers should be used with caution. The interests of the shipowner must be carefully considered on the one hand, and the interests of the seamen on the other. It must not be supposed that the shipowner was the only party that was blameworthy and that the seaman was never in any way to be blamed. The fact in many cases was very different. However anxious parties might be to increase the seaworthiness of vessels, seamen could very seldom be induced to go and look out their ships for themselves. When they joined a ship they were often drunk, being literally carried on board by their lodging-house keepers—the vessels in the Mersey and the Thames serving as hospitals in which they might recover from their crapulous imbecility. When collisions occurred whose fault was it? In great measure the fault of the seamen who would not keep a look-out; and they could not be punished for not keeping a look-out. What he wanted was, while they proposed to punish the shipowner for the unseaworthiness of his ship, that means should be given for enforcing discipline on board our Mercantile Marine as in the Navy. He only wished they had also abolished advance-notes, which generally fell into the hands of crimps. Merchants, shipowners, and others who had looked into the subject had said that until you got rid of these advance notes, you would never get rid of the slavery to which the sailor was subjected. He hoped when the Government brought in the Bill of next year, it would be seen that they had paid special attention to this subject. People talked about free contract between the seaman and the shipowner. But how could there be free contract when one of the parties was unfortunately often in such a state that he had to be carried on board? Then there was another point as to the ships themselves. It was a mistaken opinion that all the ships which were

lost were old, rotten, wooden vessels. The great danger now was from new iron-built ships. Those who had looked into the subject were well aware of that. He feared that the Board of Trade would be too much taken up in carrying out this Bill and watching Railways during the coming autumn, and would not have time to prepare a new Bill. He hoped the Government would strengthen the department, so that they might have assistance in preparing the measure of next year. (Hear, hear.)

The LORD CHANCELLOR said the noble duke had stated that something should be done to make seamen more careful. He was bound to say, according to his experience, derived from cases in which he had been engaged, that the want of look-out was seldom attributable to the sailors, but much more frequently to the master or the mate, or, in other words to the skilled navigators of the ship. The noble duke had said that sailors were a very careless race—that they would not take the trouble to walk 100 yards to see whether the ship was unseaworthy or not, and that they were often carried on board drunk. There could hardly be a better proof of the necessity of legislation. If sailors were careful and vigilant, legislation would not be required. It was because sailors were negligent and often taken on board drunk, that it was necessary to enforce against the shipowner what after all was only the shipowner's duty. With regard to the advance-note system, it was fraught with evils of every kind. Sailors for a debauch on shore would anticipate their earnings, and not only would they not receive the full amount they were entitled to, but the notes were discounted at an exorbitant rate, and a very small portion of the money was enjoyed by the sailor. As to insurance, he could say that the subject would be most carefully considered by Her Majesty's Government. The more it was looked into, the more the question would be asked why, if in the case of life and fire insurance, the insurer would not be allowed to receive more than would compensate him for the loss sustained, the insurer of a vessel might contract beforehand that there should be no examination into the amount of damage, but that a gross, absolute sum should be paid over, no matter how much that gross sum might exceed the loss. (Hear, hear.) This was a grave subject for consideration, and the more it was considered the more closely it would be found connected with the subject now before their lordships. However, this was a matter which required ample time for its discussion.

LORD DENMAN quoted the opinion of an experienced officer of the Navy as to grain cargoes. (It was not worth much.)

EARL GRANVILLE did not propose to prolong this discussion, particularly after the speeches of his noble friends—(Lord Carlingford and the Duke of Somerset)—speeches which, he could not help thinking, the Government

would find of great use when they were engaged in preparing the permanent and more extensive measure which they proposed to submit next year. Without entering into the story of the Bill—a story which might be told in different ways—he expressed his satisfaction that the Government had been able to introduce even this provisional measure which was likely soon to pass into law. (Hear, hear.)

The Bill was then read a second time.

MERCHANT SHIPPING ACT, 1875.

(88 and 89 Vic., cap. 88), 13 August, 1875.

Clause.

1. Appointment and Powers of Officers having Authority to Detain Unseaworthy Ships.
2. Ship to be Detained on Complaint of Crew.
3. Cargo of Grain, &c.
4. Penalties on Sending Unseaworthy Ships to Sea.
5. Marking of Deck-lines.
6. Statement of Load-line.
7. Penalty for Offences in Relation to Marks on Ships.
8. Proceedings may be taken against the Board of Trade by action against the Principal Secretary.
9. Liability of Shipowner to Crew.
10. Short Title.
11. Duration of Act.

AN ACT TO MAKE PROVISION FOR GIVING FURTHER POWERS TO THE BOARD OF TRADE FOR STOPPING UNSEAWORTHY SHIPS.

Be it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows :

1.—*Appointment and Powers of Officers having Authority to Detain Unseaworthy Ships.*—The Board of Trade may forthwith and from time to time by special order appoint a sufficient number of fit and proper persons, from their own staff or otherwise, to be officers having authority to detain unseaworthy ships, and may from time to time revoke any such appointment.

If any officer so appointed has reason to believe upon inspection or otherwise that any British ship is by reason of the defective condition of her hull, equipments, or machinery, or by reason of overloading or improper loading unfit to proceed to sea without serious danger to human life, he may order that the ship be detained for the purpose of being surveyed.

Any such order shall have the same effect as if it were an order of the Board of Trade under section twelve of the Merchant Shipping Act, 1873.

For the purpose of ascertaining whether a British ship is fit to proceed to sea, any officer so appointed may go on board the ship and inspect the same, or any part thereof, or any of the machinery, boats, equipments, or other articles on board thereof, not unnecessarily detaining or delaying her from proceeding on her voyage; and any person who wilfully impedes him in the execution of his duty shall be liable to the same penalties, and may be dealt with in the same manner as if the officer were an inspector appointed by the Board of Trade under the Merchant Shipping Act, 1854.

When any officer so appointed orders a ship to be detained, he shall forthwith report his proceedings to the Board of Trade.

An officer so appointed shall receive such remuneration for his services under this Act as the Treasury from time to time direct, and such remuneration shall be paid out of moneys to be provided by Parliament.

[Is not this section to be regarded with great apprehension? The effect of interference has already been the transfer of 875 British ships to foreign flags, not because the ships were unseaworthy, but to avoid harassing interference. If the clause is worked as Mr. Plimsoll wishes—nay, almost directs, will its results not be most disastrous? Government officers always support each other, and if a ship is detained by a “superior” officer, is it likely that the “inferior” officer who is to work under the orders of the “superior” will dare to offend him by finding the ship seaworthy? If he does so, will he not be passing judgment on his superior? If the same surveyor both detains and makes the subsequent survey, the shipowner may come off but poorly.]

2.—*Ship to be Detained on Complaint of Crew.*—Whenever a complaint is made to the Board of Trade or to any officer so appointed by one-fourth of the seamen belonging to any British ship, that the ship is by reason of the defective condition of her hull, equipments, or machinery, or by reason of overloading or improper loading, unfit to proceed to sea without serious danger to human life, it shall be the duty of the Board or officer, as the case may be, if the complaint is made within time sufficient for that purpose before the sailing of the ship, without requiring any security for the payment of costs and expenses, to take proper steps for ascertaining whether the ship ought to be detained for the purpose of being surveyed under the Merchant Shipping Act, 1873.

[We apprehend that under this section one-fourth of the crew of a ship which may call for orders anywhere, and before the sailing of any ship at any time, may leave her to go ashore to make complaint. Their absence may lead to the loss of the ship. For instance, a ship is towed

down to the Nore and anchors there, let us say, for the purpose of getting her crew sober. The intention of her master is to get her under sail the next day. But "before the sailing of the ship," in fact, before the master can get any sail on the ship, the whole of the seamen combine to knock off and go ashore to demand a survey. How will this lead to safety of life? The ship will be left helpless with the passengers on board. If the master does not let the crew go ashore, matters will be worse still. If the clause had provided that the seamen's right to demand a survey without giving security for costs, should only apply to cases in which the complaint was made before the ship left the wharf, dock, or place where the seamen were engaged, the matter would have been plainer. But, doubtless, the intention of the Legislature is, that the seaman shall have a chance of detaining the ship *after* he is sober enough to object to her. We are afraid it will mean when he is cunning enough, to get another advance of wages. Will it not be necessary also, so as to prevent delay to shipowners, for the Board of Trade not only to appoint persons at every place (where seamen can go ashore) to survey hulls, boilers, and machinery under this section, but also "superior officers" who can detain ships for survey whenever a fourth of the crew complain? Unless some officers are "so appointed" to detain ships everywhere, will not this section become a dead letter? It is to be noted that the word "seamen" includes stewards, stewardesses, firemen, and coal-trimmers, but does not include indentured apprentices. See Definition Clause, Section 2 of the Merchant Shipping Act, 1854. All the coal-trimmers may object first; they being satisfied, all the "idlers" may object, they being satisfied, all the "ordinary seamen" may object, and so on. It will be cheaper to give the men a sovereign all round than to detain the ship. In case the cause of complaint is unseaworthy boilers, will not the officer "so appointed" have to make a very careful examination of the boilers? and if so how is he to do this without unnecessarily detaining or delaying the ship from proceeding on her voyage? May not a mistake on the part of the officer "so appointed" render the Board of Trade liable for damages? It will be the duty of the owners to see for themselves what is "necessary" delay and what "unnecessary." This and Clause 1 formed the whole of the "Stop-Gap Bill" as introduced.]

3.—*Cargo of Grain, &c.*—From and after the first day of October one thousand eight hundred and seventy-five, no cargo of which more than one-third consists of any kind of grain, corn, rice, paddy, pulse, seeds, nuts, or nut kernels shall be carried on board any British ship, unless such grain, corn, rice, paddy, pulse, seeds, nuts, or nut kernels be contained in bags, sacks, or barrels, or secured from shifting by boards, bulk-heads, or otherwise. This section shall not apply to any grain shipped

previous to the first October one thousand eight hundred and seventy-five.

The master of any British ship who shall knowingly allow any cargo or part of a cargo to be shipped therein for carriage contrary to the provisions of this section shall for every such offence incur a penalty not exceeding two hundred pounds.

[This clause is in the opposite sense of Mr. Plimsoll's clauses. It leaves the responsibility on the owner to secure cargo from shifting just how he pleases; all he has to do is to do it effectually. As originally proposed by Mr. Plimsoll, it required one-third of the cargo to be carried in bags. It was modified by the Government in Committee.]

4.—*Penalties on sending Unseaworthy Ships to Sea.*—Section eleven of "The Merchant Shipping Act, 1871," shall be repealed, and in lieu thereof it shall be enacted:

- (1.) Every person who sends a ship to sea in such unseaworthy state that the life of any person would be likely to be thereby endangered, and the managing owner of any British ship so sent to sea from any port in the United Kingdom, shall be guilty of a misdemeanour, unless he prove that he used all reasonable means to ensure her being sent to sea in a seaworthy state, or prove that her going to sea in such unseaworthy state was, under the circumstances, reasonable and justifiable; and for the purpose of giving such proof, such person may give evidence in the same manner as any other witness:
- (2.) Every person who attempts or is party to any attempt to send to sea any ship in such unseaworthy state that the life of any person would be likely to be thereby endangered, shall be guilty of a misdemeanour unless he give such proof as aforesaid, and for the purpose of giving such proof such person may give evidence as aforesaid:
- (8.) Every master of a British ship who knowingly takes the same to sea in such unseaworthy state that the life of any person would be likely to be thereby endangered shall be guilty of a misdemeanour, unless he prove that her going to sea in such unseaworthy state was, under the circumstances, reasonable and justifiable, and for the purpose of giving such proof such person may give evidence as aforesaid:
- (4.) The owner of every British ship shall from time to time register at the Custom House of the port in the United Kingdom at which such ship is registered the name of the managing owner of such ship, and if there be no managing owner, then of the person to whom the management of the ship is entrusted by and on behalf of the owner; and in case the owner fail or neglect to register

the name of such managing owner or manager as aforesaid he shall be liable, or if there be more owners than one, each owner shall be liable in proportion to his interest in the ship, to a penalty not exceeding five hundred pounds each time that the said ship leaves any port in the United Kingdom, after the first day of November one thousand eight hundred and seventy-five, without the name being duly registered as aforesaid :—

- (5.) The term "managing owner" in sub-section one shall include every person so registered as managing owner or as having the management of the ship for and on behalf of the owner :
- (6.) No prosecution under this section shall be instituted except by or with the consent of the Board of Trade :
- (7.) No misdemeanour under this section shall be punishable upon summary conviction.

Provided that the repeal enacted by this section shall not affect any punishment incurred or to be incurred in respect of any offence against the enactment hereby repealed, or any legal proceeding in respect of any such punishment, and any such legal proceeding may be carried on as if this Act had not passed.

[This is all in the right direction. It is entirely against the Plimsollian theory. It holds persons responsible for their own acts, whereas the other theory places the responsibility for seaworthiness on inspectors. There is nothing new in principle in this section. It is merely an extension of the 11th Section of the Act of 1871. It throws on the persons attempting to send, as well as the persons attempting to take a ship to sea, the responsibility of seeing that she is seaworthy. A ship may now be stopped on the eve of departure, and may be broken up, and the owner, master, and agent may be proceeded against also. The punishment of a shipowner or master will, therefore, no longer end with the breaking up of his ship ; he will be liable to fine and imprisonment as well. Under this section, also, an underwriter who insures an unseaworthy ship, and is therefore a "party" to sending her to sea, will probably become liable. Many ships would never be sent to sea unless they are first insured. Underwriters know they are "unseaworthy," for they charge an extra premium for the extra risk. This proves their knowledge, and makes them a "party to an attempt" to send her to sea. In the case of ships owned by companies, unless the directors appoint a marine superintendent or managing owner, on whom shall rest the sole responsibility of sending the ships to sea in a seaworthy condition (whom they must, of course, indemnify), they will have to register all the directors as managing owners under this section. This section also, was not in the Stop-Gap Bill. It is an elaboration of a clause in Sir Charles Adderley's Bill, which was withdrawn on Thursday, the 22nd

of July. The suggestion as to registering a managing owner, is one strenuously advocated by Mr. Wm. Stirling Lacon, before Mr. Plimsoll was heard of. We are entirely at one with Mr. Lacon as to "personal responsibility," and we think it right to place his name on our pages in connection with one of his pet proposals.]

5.—*Marking of Deck-lines.*—Every British ship registered on or after the first day of November one thousand eight hundred and seventy-five shall before registry, and every British ship registered before that day shall, on or before that day, be permanently and conspicuously marked with lines of not less than twelve inches in length and one inch in breadth, painted longitudinally on each side amidships, or as near thereto as is practicable, and indicating the position of each deck which is above water.

The upper edge of each of these lines shall be level with the upper side of the deck plank next the waterway at the place of marking.

The lines shall be white or yellow on a dark ground, or black on a light ground.

Provided that—

- (1.) This section shall not apply to ships employed in the coasting trade or in fishing, nor to pleasure yachts; and
- (2.) If a registered British ship is not within a British port of registry at any time before the first day of November one thousand eight hundred and seventy-five, she shall be marked as by this section required within one month after her next return to the British port of registry subsequent to that date.

[We regard this as a great improvement over the "ladder of feet," which the Royal Commission adopted on the recommendation of the late Mr. Lamport. Everyone will now be able to see where the decks are. This section was not in the Stop-Gap Bill; it also is mainly from the dropped Bill of Sir Charles Adderley.]

6.—*Statement of Load-line.*—With respect to the marking of a load-line on British ships, the following provisions shall have effect:

- (1.) From and after the first day of November, 1875, the owner of every British ship shall, before entering his ship outwards from any port in the United Kingdom upon any voyage for which he is required so to enter her, or if that is not practicable, as soon after as may be, mark upon each of her sides amidships, or as near thereto as is practicable, in white or yellow on a dark ground, or in black on a light ground, a circular disc, twelve inches in diameter, with a horizontal line eighteen inches in length, drawn through its centre:
- (2.) The centre of this disc shall indicate the maximum load-line in salt water to which the owner intends to load the ship for that voyage:

- (3.) He shall also, upon so entering her, insert in the form of entry delivered to the collector or other principal officer of customs, a statement in writing of the distance in feet and inches between the centre of this disc and the upper edge of each of the lines indicating the position of the ship's decks which is above that centre :
- (4.) If default is made in delivering this statement in the case of any ship, any officer of customs may refuse to enter the ship outwards :
- (5.) The master of the ship shall enter a copy of this statement in the agreement with the crew before it is signed by any member of the crew, and no superintendent of any Mercantile Marine office shall proceed with the engagement of the crew until this entry is made :
- (6.) The master of the ship shall also enter a copy of this statement in the official log-book :
- (7.) When a ship has been marked as by this section required, she shall be kept so marked until her next return to a port of discharge in the United Kingdom.

[This section, again, is totally opposed to the theory and proposals of Mr. Plimsoll. The disc is to be put on the ship by the owner, and he is to be responsible. The crew are to know its position at the time of their engagement, and it is to be recorded afterwards. The crew will have no grounds of complaint afterwards that the ship is overloaded, for they will sign articles stipulating to serve with the load-line and at a load-draught plainly stated before their eyes. We regard this section as worthy of a permanent place on the Statute Book. This section, of which the substance was in Sir Charles Adderley's withdrawn Bill, was not in the Stop-Gap Bill. It is nearer to the proposals of Mr. Norwood than to the proposals of any other member.]

7.—*Penalty for Offences in Relation to Marks on Ships.*—Any owner or master of a British ship who neglects to cause his ship to be marked as by this Act required, or to keep her so marked, and any person who conceals, removes, alters, defaces, or obliterates, or suffers any person under his control to conceal, remove, alter, deface, or obliterate any of the said marks, except in the event of the particulars thereby denoted being lawfully altered, or except for the purpose of escaping capture by an enemy, shall for each offence incur a penalty not exceeding one hundred pounds.

If any of the marks required by this Act is in any respect inaccurate, so as to be likely to mislead, the owner of the ship shall incur a penalty not exceeding one hundred pounds.

[This section was not in the Stop-Gap Bill, and it also is mainly from Sir Charles Adderley's original Bill.]

8.—*Proceedings may be taken Against the Board of Trade by Action Against the Principal Secretary.*—Where a claim of compensation under the Merchant Shipping Act, 1873, is made against the Board of Trade, and liability to pay compensation, or the amount thereof is in dispute, proceedings may be taken against the Board of Trade by action against the Principal Secretary thereof as nominal defendant.

[This section is quite against Mr. Plimsoll's views. The hon. gentleman objects to compensating shipowners whose ships are detained for inspection.]

9.—*Liability of Shipowner to Crew.*—In every contract of service, express or implied, between the owner of a ship and the master or any seaman thereof, and in every instrument of apprenticeship whereby any person is bound to serve as an apprentice on board any ship, there shall be implied, notwithstanding any agreement to the contrary, an obligation on the part of the owner of the ship to the master, seaman, or apprentice, that the owner of the ship, his agents and servants, shall use all reasonable efforts to insure the seaworthiness of the ship for the voyage at the commencement thereof, and to keep her in a seaworthy condition during the voyage.

Provided that nothing in this section shall make the owner of a ship liable for the death of or any injury to a master, seaman, or apprentice belonging to any ship when caused by the wrongful act, neglect, or default of a seaman or apprentice belonging to the same ship, in any case where he would not otherwise be so liable.

[This section is founded on a recommendation of the Royal Commission. It was in Sir Charles Adderley's Bill, but was not originally in the Stop-Gap Bill.]

10.—*Short Title.*—This Act may be cited as the Merchant Shipping Act, 1875, and shall be construed as one with the Merchant Shipping Act, 1854, and the Acts amending the same, and the said Acts and this Act may be cited collectively as the Merchant Shipping Acts, 1854 to 1875.

11.—*Duration of Act.*—This Act shall continue in force until the first day of October one thousand eight hundred and seventy-six.

[This is the best section in the whole Act. It will ensure ample opportunities for discussing the subject next session.]

Such is the Merchant Shipping Act of 1875: a great part of it being taken from Sir Charles Adderley's withdrawn Bill, deserves, and will, no doubt, obtain a permanent place in the Statute Book. Mr. Plimsoll in no way assisted, but always opposed and ridiculed the Acts of 1871 and 1873, under which so much good has been done. Still those Acts, contrary to all reason, are called "The Plimsoll Acts."

And so it will probably happen that this Act of 1875, owing to the scene in the House of Commons on Thursday, the 22nd July, will be

called Mr. Plimsoll's Act, although it does not contain a single proposal that he has originated: and that he in no way assisted in discussing it. Sir Charles Adderley spoke up manfully on the third reading of the "Stop-Gap" Bill, and defied anyone to show where he had failed in his duty. If proof were wanted of his desire to do right, it is certainly to be found in the fact that no sooner did the "breeze of popular opinion" (which had been waited for for six weeks) enable the Government to take up the measure, than clauses out of Sir Charles Adderley's dropped Bill formed the staple of the new.]

THE PLIMSOLL CRAZE.

(The following article from "Vanity Fair" leads us to hope that reason is again likely to resume her dominion.)

THAT Mr. Plimsoll should have insulted the Government, outraged the House of Commons, and libelled several of its members, and that without having made anything like reparation, he should be allowed to go scot free, and even be treated and talked of as though he had a claim to admiration for these fantastic pranks, this is a matter which concerns those whom he has attacked, and nobody need greatly care that the Government has been rendered ridiculous, that the House has lost dignity, or that individuals have failed duly to vindicate their honour, so long as they and Plimsoll are content.

But what is important is, that all these evolutions seem destined to result in legislation of a kind which will be most injurious to the country; that the Government and the House, cowed by the blatant violence of Mr. Plimsoll, are prepared to concur with him; and that the individuals who know better, are too frightened to resist him, in laying down regulations with regard to our shipping, which will do absolutely nothing to prevent loss of life, while they will be sufficient to destroy the most important and valuable portion of the Mercantile Marine of the country, and to put an effectual end to the British sailor. That this should be done upon the strength of statements, and in order to give effect to notions equally false and absurd, and that the ignorance of the House of Commons and the fear it has of Mr. Plimsoll and his friends, should be sufficient to make it entertain and adopt those statements and notions, this is most serious, since it shows that the assembly which practically rules us has neither ability nor courage to resist the most insane and fatal propositions if only they are presented with sufficient violence and clamour.

Mr. Plimsoll says that many sailors are lost at sea, which is true. But then he says that what he proposes to do, would prevent them, or a great number of them, from being lost, which is not true. What is true,

is that what he proposes would prevent a great number of them from going to sea at all. There are hundreds of vessels, coasters, colliers, and small craft of from fifty to three hundred tons trading to the Continent, which are perfectly good for the purposes to which they are put. They are owned by small adventurers. The masters, themselves men who have risen from before the mast, and have saved a little money out of their hard earnings, often have a share in them, and in many cases take their wives and families to sea with them. This class of craft it is that carries on almost all the coasting and continental trade. They are the best, indeed it may be said the only, school of seaman we have beside the fishing trade; but there are few of them that could either support the expense or fulfil the requirements of the kind of overhauling and surveying which Mr. Plimsoll advocates. The proof of this is that, even in the modified and comparatively mild form at present established, the Plimsoll treatment has already extinguished an alarmingly large number of these craft. Hundreds of them have been broken up, hundreds of them have been transferred to foreign flags, and in every continental port may now be seen the humiliating spectacle of British vessels with British crews sailing under Belgian colours, because they have been driven out of their nationality by this ridiculous and vexatious interference. We repeat that the vessels which have thus suffered are perfectly good for the trade in which they are employed; but even if it were not so, there can be no right in a free country to forbid men from earning their living by sailing in them. The captain certainly knows the ship, and the crew are not forced to join her unless they please so to do, any more than the captain. They are not brought to her by a pressgang; they ship voluntarily; and they have as good a right to do so as any man has to do anything in the world. Yet these are the vessels which are to be absolutely condemned, extinguished, and driven—if they will continue to sail the seas—into adopting a foreign nationality. Mr. Plimsoll may hold that it is well they should be extinguished, and that all trade should be carried on only by steamers, large ships, and large shipowners; but that will not be the result, for other countries are not so foolish as to legislate for the destruction of their trade; and the result will be that the same trade will be carried on in the same way, but that it will be foreign instead of British ships and sailors who will alone be able to engage in it, and that the foreign flag will finally oust the British in our own as well as in continental ports. It has already done so to a large extent,* and if the

* To so large an extent that no less than 876 British ships have been transferred to foreign flags since January, 1873. Let the candid mind think of the number of seamen lost to the British flag by those transfers alone. We shall soon, indeed, have no sailing coasters and home trade ships in which to raise our reserves. These 876 ships were not unseaworthy, but were merely transferred to free the owners of the interference and harassment by the Plimsoll craze.

insane Plimsoll policy is persevered in, it will in a very few years do so completely. The British sailor will soon be found walking about our ports with his hands in his pockets, wondering why it is he cannot obtain employment, and when he finds it becoming more and more difficult, haply he may become aware that his friend Plimsoll has brought about this result out of his pure affection for him. The next consequence will be that, the demand for sailors having diminished, the supply will also diminish, and that the Mercantile Marine, which is the pride, and the boast, and the backbone of the strength of this country, will be found so shrunk in proportions as to be but a shadow of its former self. All this is not merely probable, it is inevitable, if Plimsoll legislation is to be established; and when it is felt and seen it will be too late for remedy. Mr. Plimsoll, in fact, seeks to save the British sailor's life by preventing him from earning a living, and for this he claims the sailor's support and gratitude, and, what is more insane, claims and has received the support of that Parliament which affects to be composed of Statesmen.

It cannot be too often repeated, and everybody who knows anything of the sea knows it, that Mr. Plimsoll's proposals for marking load-lines and surveying would not have the effect he fondly supposes of preventing vessels from being lost. If many are lost through being too heavy, many are also lost through being too light, and the greatest loss of life takes place in those that have been most completely surveyed and highly classed. He desires to establish a purely illusory security, and he advocates his desire by statements of fact which are themselves either absolutely false or equally illusory. He publishes repeatedly the names of ships which have been "lost with all hands," as though what he proposes would have prevented their loss, whereas it is shown by the last returns that sixty per cent., or by far the great majority of these missing ships, had been surveyed, and classed as the result of survey in the highest category; so that the very vessels which would most completely satisfy Plimsoll are those which do most of the harm he seeks to prevent. This, however, is a mild specimen of Mr. Plimsoll's proceedings. He doubtless does not intend to lie, but he certainly does lie in the most astounding and reckless manner. For instance, he said on Friday night last, that "Twenty thousand of Her Majesty's subjects had been drowned, and thirty millions of property had been lost, in consequence of that night's work," which repealed in 1862 an Act prohibiting deck-loads on timber vessels sailing in the winter months from the North American Colonies. So far is this from being true that in fact the number of ships lost in the trade thus dealt with, has been actually less in the ten years following than it was in the ten years preceding the repeal of the Act in question. It is, therefore, merely one of Mr. Plimsoll's many inventions to charge any night's work with the loss of those twenty thousand. But Mr.

Plimsoll justly estimates the legislators with whom he has to deal. He makes outrageous charges and false statements by wholesale, and when he is pressed or challenged, he proves to be too ill to maintain what he has said. By such means he has so far succeeded as to persuade the Government to introduce a Bill, now in course of being passed, which will give despotic powers to the Board of Trade such as were never before given to any single person or body of persons in this country. The large shipowners are in league with the Plimsoll party, for the simple reason that they at least see that the result of such legislation as this will be to destroy the small shipowners, and thus to diminish the number of their competitors for trade. Lloyd's office is equally in league with them; for it is hoped that a law of universal compulsory survey and classification by Lloyd's will be established, which would of course enormously increase the revenues of that office. Lloyd's, indeed, have already published in the *Times* an astounding claim to be the only body competent to survey and class, as though the "Veritas," the "Liverpool Book," and the "New York Book" did not exist. It all points to the same thing; and between all these interests and the ignorance of Parliament, the small shipowner, the small ships, and the good sailors they have made, will shortly be legislated out of existence.

THE "GOLIATH" TRAINING-SHIP.—On Saturday, July 31st, the annual dinner of the *employés* of Messrs. Pewtress & Co., printers of the *Nautical Magazine*, took place at Grays, Essex, where, during the day, they visited the *Goliath* training-ship; and by kind permission of Captain W. S. Bouchier, R.N., were conducted over the vessel by the school-master, Mr. J. W. Tye, with great courtesy and kindness. Every object of interest connected with the ship was explained to them, as well as the duties of the boys whilst on board, which were highly interesting. It certainly was most gratifying to see 486 boys so comfortably located, and all looking cheerful and happy. Everything was clean and in first-rate order, and at the sound of the bugle for attention, silence everywhere on board prevailed on the instant. The good order and discipline throughout are due to the untiring zeal of Captain Bouchier, and the officers under his command. In the evening the boys were put through various evolutions, winding up with some creditable performances of their excellent band under the conductorship of Mr. D. Mahoney, band-master, the boys dancing to their tunes on the quarter-deck. The visit was most enjoyable, and was highly appreciated by the party of printers whose daily labours are intimately connected with nautical matters.—[We have the greatest pleasure in publishing the above, which has emanated from our printing staff. It is very pleasing to find those about us interested in the work of the *Nautical Magazine*.—Ed.]

ATLANTIC STEAM FERRIES.—III.

THE INMAN LINE.

IT is not to be supposed that the doings and the success of the Cunards was watched without the keenest interest by the other shipowners and merchants of Liverpool. That company was, if not mainly dependent upon, yet greatly assisted by the mail subsidy. The mere fact of carrying the mails was then, as it is now, of the greatest possible commercial value, and although it would be too much to say that the Cunard Company would carry the mails for nothing rather than give them up altogether, still the evidence given by Mr. John Burns, before one or more Committees upon Mail Contracts, points to that conclusion. If the Cunard Company had started, as the Americans say, entirely upon its "own hook," that is without any assistance from mail subsidies, not many years would have passed before some formidable rival would have entered the field.

Twelve years were, however, suffered to elapse before the Liverpool shipowners had sufficient confidence in the new steam traffic to embark in it upon a large scale, and to that fact, not less than to the great enterprise and foresight of its partners, the unparalleled success of the Cunard Company is due. In the year 1850, however, the Inman Company, formerly the Liverpool, New York, and Philadelphia Steamship Company, and now, since February last, the Inman Steamship Company (Limited), entered the lists, under circumstances which show that the idea was a most daring one on the part of its originator. There was no hope then of a mail subsidy. All the chances of success were to be found in the correctness of the calculations made, not only as to the existing trade, but as to its possibilities in the future. In both of these points the Inman Company were more than justified by the events. It is interesting to look back at this time of day to note the period when screw-steamers were experiments, and when the failure of one of them might have meant the ruin of its owners. Yet this is not more than twenty-five years ago—that is to say, when the Inman Company started. Their project was launched, therefore, with a double risk—the risk which inevitably attends a new undertaking, and the risk which invariably attaches to the proof of a new mechanical principle. It was a daring thing, therefore, for the Inman Company to start their concern with the first screw-steamer which ever crossed the Atlantic in winter.

The Inman Company, however, are entitled to some credit upon another point, which may seem a curious one in these days. Emigration to the United States and to Canada has of late years taken so great and so

regular a form, that Englishmen have come to regard it as quite in the nature of things. There could not be a greater mistake. How are the masses of useful labourers unable to read, and careless of information to be interpenetrated by ideas of wealth and competency to be found in places they never heard of? Some letter might occasionally find its way to the cottage, painting in glowing colours the prospects of the Great West, but a movement founded upon such agencies would be a slow process indeed. One of the principles upon which the Inman Company started was to work what may be called the emigration vein in this country.

Up to their appearance on the scene, ordinary emigrants to America had been carried out in sailing vessels upon a voyage occupying six or seven weeks, amid horrors and discomforts altogether unknown to this generation. Starting, therefore, upon the assumption that emigrants, not being absolute fools, would prefer to go out in thirteen days amid circumstances of comparative luxury and at less cost, the Inman Company set themselves vigorously to work to bring their project into effect. They established agencies at an enormous cost throughout all parts of the United Kingdom, and it was made the especial business of their agents to come into personal and oral contact with the emigrating classes to the advantage, not only of the enterprising company, but to the general good; for no one will deny that the emigration of the past generation has been of immense benefit to this country. The Inman Company also took means to establish an agency between emigrants settled in America and their friends in these islands, a proceeding which has resulted in considerable sums being remitted yearly in advance to pay the passage of emigrants to their friends in America.

In reference to this subject, it may be interesting to state that, in 1869, Mr. William Inman gave evidence to the following effect before a Committee upon the vexed question of Mail Contracts. In reply to a question as to the effect of carrying the mails in inducing increased passenger traffic, Mr. Inman said:—"I think some companies who are offering cheap postage might consider that it would be to their advantage; but as we were the first in the American trade to carry emigrant passengers, and we are so well known all over America, and our name has been so long associated with the American trade, I do not care for that." This was a proud thing to be able to say before a Committee. He also said—"I maintain that I have gained my end in this—that the Atlantic is now an open sea upon which anybody may come; there is no advantage to anybody over others;" and he maintained this even in the face of the contract for carrying mails weekly, which does not expire until the year 1876. It should be mentioned here that the effect which the enterprise of Mr. William Inman had upon the minds of his great competitors, the Cunard Company, was shown in the

evidence of Mr. John Burns, before the same Committee, and upon the same day. Mr. John Burns, who had given a history of the alliance between the Cunard Company and the Inman Company with regard to the postal contracts, said :—"I confess before this Committee there was a greater advantage than the money in that contract, which was, that I was enabled by the negotiation to cement a commercial friendship with Mr. Inman, which I consider to be of more value to him and to us." Altogether, there is quite sufficient evidence already adduced to show that the prosperity of the Inman Company is owing, not to accidents or to a sudden rush of trade, but to a thoroughly well-conceived idea of the wants of the day, and a spirit of daring in the use of new ideas and new methods.

The Inman Company did not spring into existence as the result of a sudden inspiration of eager capitalists. Mr. William Inman, the managing director of the line, was, before the year 1850, a partner in the firm of Richardson Brothers and Company, shipowners, of Liverpool. The firm of Richardson Brothers was, in 1850, merged in the Liverpool and Philadelphia Steamship Company, but after a period of five years Mr. Inman was the sole representative of the old firm left in the Company, now known as the Inman Steamship Company (Limited). The first proceeding of the Inman Company was to purchase, in the year 1850, the iron screw-steamship *City of Glasgow*, from the builders, Messrs. Tod and Macgregor, of Glasgow. It is singular to notice that her destination was not New York, the port to which all the Inman steamers now run, but to Philadelphia. It is to be supposed that in those days the idea of running to New York was thought to be too bold in the way of competition, and accordingly the *City of Brotherly Love* was selected. Philadelphia, which in her turn was deserted by the Inman Company, has been, within the last three years, made an Atlantic steamship port, a fact which will be no doubt appreciated during the Centennial Exhibition.

The *City of Glasgow*, the first iron screw-steamer engaged in the American trade, and the first venture of the Inman Company, started upon her first voyage on the 15th December, 1850. The influences of the season, and the well-known tendency of mankind to look askance upon new and daring ventures, led to many prophecies of evil as to this new experiment; but, in the end, British pluck and energy prevailed, and the screw-steamship *City of Glasgow*, the pioneer steamship of the Inman Line, proved itself a success, and has since become the model upon which all the vessels built in the Clyde for the Transatlantic steam trade have been built. This, of itself, is something to be proud of. It is no small thing to lead the way in a matter of so much importance as a new form of steamship; but this credit belongs to the Inman Company. The difference between the *City of Glasgow*, which set forth on its first

voyage in the dark days of December, 1850, and the magnificent *City of Berlin*, now upon the line, is one, not of principle, but of proportions. The former was a vessel of 1,600 tons and 350 horse-power, while the latter is a leviathan of 5,490 tons, and 1,000 horse-power. When we remember that this progress is but that of a quarter of a century, a third of the life of a hale old man, we may well be excused for being proud of the magnificent spirit of enterprise and daring which gave England the sceptre of the sea in the days of Elizabeth, and which keeps it still more glorious in its preservation in the era of Victoria.

The immediate success of the *City of Glasgow*, encouraged the Inman Company at once to place another screw-steamer on the line. This was the *City of Manchester*, a vessel of 1,900 tons, specially designed and built for the trade by Messrs. Tod and Macgregor. It was not long before the company were enabled to keep up a fortnightly service, several fine vessels having been added to the fleet; among others, the *City of Baltimore*, the *City of Washington*, and *The Kangaroo*. This brings us up to the year 1857, when the fortunes of the company may be said to have been established upon a sure and firm foundation. It is not often that, in the space of seven years, so great a commercial undertaking is piloted from the breakers and shoals of early existence into the happy harbour of assured prosperity.

Like some others of the Liverpool Steamship Companies, the Inman Company took part in the transport service of the Crimean War. This leads naturally to another observation upon the value of such a grand fleet of commercial steamships as we possess between Great Britain and America. In time of war the transport service is of supreme importance, but with our great Transatlantic commercial fleet, we have transports ready to our hand in case of our need. With regard to the Inman Company, it is to be remarked that while, in 1857, their three fine steamers, the *City of Manchester*, the *City of Baltimore*, and the *City of Washington*, were chartered by the French Government as transports, the British Government was unable to get sufficient vessels for its service. The explanation is, that our Government did not offer terms so advantageous as those willingly conceded by our French allies.

It was in this year, 1857, that the Inman Company, no longer afraid of the competition at New York, enlarged the sphere of their operations, and added New York to their ports of arrival; at the same time changing the name to the Liverpool, New York, and Philadelphia Steamship Company. One of the first results of this was, the establishment by the company of a fortnightly service between Liverpool and New York. Three years afterwards, that is to say in 1860, a weekly service was established. In 1866, steamers were despatched twice a-week in the summer season to New York, and there is now a bi-weekly service regularly maintained.

The existing fleet of the Inman Company consists of the following vessels :—

Year of Introduc- tion to the Line.		Gross Tonnage.	Net Tonnage.	Nominal h. p.
1875	<i>City of Berlin</i>	5,490	2,956	1,000
1878	<i>City of Chester</i>	4,565	2,712	850
1878	<i>City of Richmond</i>	4,606	2,823	850
1872	<i>City of Montreal</i>	4,451	3,027	600
1869	<i>City of Brussels</i>	3,747	2,323	600
1869	<i>City of Brooklyn</i>	2,911	1,980	450
1867	<i>City of Antwerp</i>	2,391	1,626	350
1866	<i>City of Paris</i>	3,081	1,975	550
1865	<i>City of New York</i>	3,499	2,380	350
1865	<i>City of Durham</i>	697	538	120
1868	<i>City of London</i>	2,765	1,880	450
1868	<i>City of Limerick</i>	2,536	1,724	250
1860	<i>City of Bristol</i>	2,655	1,805	250
	<i>Ajax</i>	163	133	30
	<i>Bosphorus</i>	448	333	30
	<i>Hercules</i>	211	174	30
		44,216	28,389	6,900

It will be seen from this table that the one endeavour of the Inman Company has been to keep pace with the wants of the times, in regard both to speed, comfort, and safety. It will be seen that while the nominal horse-power of the *City of Bristol*, added to the fleet in 1860, was as one to ten as regards the gross tonnage; that of the splendid *City of Berlin*, put on the line in March last, is as one to five and a-half. The result is, as might be expected, an immense increase in speed and regularity of running. The average passages of the "cracks" of the Inman Line may be tabulated as follows :—

OUTWARDS. (Queenstown towards New York.)				INWARDS. (New York towards Queenstown.)			
	Dys.	Hrs.	Min.		Dys.	Hrs.	Min.
S.S. <i>City of Berlin</i> -	8	15	37	S.S. <i>City of Berlin</i> -	8	4	44
S.S. <i>City of Chester</i> -	8	19	37	S.S. <i>City of Chester</i> -	8	5	51
S.S. <i>City of Richmond</i> -	8	20	15	S.S. <i>City of Richmond</i> -	8	10	10
S.S. <i>City of Brussels</i> -	9	8	0	S.S. <i>City of Brussels</i> -	8	16	0
S.S. <i>City of Paris</i> -	10	6	53	S.S. <i>City of Paris</i> -	9	4	27

In addition to this, the Inman Company lay claim to the shortest run upon record between New York and Liverpool—namely, that of the *City of Brussels*, which was logged at 7 days, 20 hours, 38 minutes. The

City of Richmond, in July of the present year, made a passage from Queenstown to New York, which, for regularity of steaming, has not many examples. The following is extracted from her log :—

Date. July, 1875.	Nautical Miles. from Fastnet.	Remarks.
Thursday.. 15		p.m., 6.0, left Liverpool.
Friday ... 16		{ a.m., 9.35, arrived at Queenstown. p.m., 4.45, left Queenstown.
Saturday... 17 ... 230 ...		} Moderate Winds throughout.
Sunday ... 18 ... 362 ...		
Monday ... 19 ... 360 ...		
Tuesday... 20 ... 380 ...		
Wednesday 21 ... 366 ...		
Thursday.. 22 ... 368 ...		
Friday ... 23 ... 361 ...		
Saturday... 24 ... 361		to Sandy Hook, p.m. 12.30 arrived at N. York.

Apparent time—7 days, 19 hours, 45 minutes = an average of 365 miles per day, or over 15 knots an hour.

The Inman Company, since they found themselves established in the first rank, have gone to enormous expense in making their steamers what can only be described as floating palaces. In regard to this matter, it is curious to notice that the impetus of comfort in ocean travelling, like that which is now agitating us with regard to railway travelling, comes from America, and it may be taken as an axiom in the Transatlantic trade that the wealthy Americans and the saloon passengers generally will select the line in which, not only their comforts, but their luxuries are most assiduously regarded. It may be all very well for cynics to snarl, but, as a matter of fact, an ocean voyage has so many *desagrégemens* that it would be a folly to disregard such matters. The latest and most luxurious form of ocean travelling is to be found in the splendid steamer the *City of Berlin* which, of course, may be outdone in time to come, but which is at present the finest thing of the kind upon the line of Transatlantic traffic.

As the *City of Berlin* is the specimen ship of the time, it may be worth while to quote some few passages concerning her, recently published in a Liverpool paper, on the occasion when she was brought round to Liverpool from Greenock, where she had been built by Messrs. Caird and Company :—

“ This grand steamer is of very large dimensions, being the largest mercantile steamship afloat, except the *Great Eastern*, and fully taxed the building space of Messrs. Caird’s establishment to provide room for her construction. She measures 488 feet in length between perpendiculars, and 520 feet in length over all ; her moulded width is 44 feet, and she is 37 feet in depth to the spar-deck, with a depth of 19 feet to

the tonnage deck. She has four decks—viz., the spar and main-decks, the lower-deck, and the orlop-deck. Her gross measurement is 5,490 tons, she is 4,634 tons builders' measurement, and her register tonnage is 3,139 tons. It may be worth while to state that her measurement under the tonnage deck is 2,614 tons. She was contracted for in October, 1873, and was launched on the 27th of October, 1874. This immense ship is propelled by a pair of inverted direct-acting compound high and low pressure engines, of 900 horse-power nominal, but capable of being worked up to five times that amount of power; indeed on her trial trip at the measured mile she indicated 5,200 horse-power. The low pressure cylinder of these engines is 120 inches, and that of the high pressure cylinder is 72 inches in diameter, with a piston stroke of 5 feet 6 inches. She is supplied with steam by twelve boilers, which are heated by thirty-six furnaces, and the provision for stoking is in every way admirable, ample means being adopted to ensure ventilation in the furnace-room, and, indeed, in every portion of the vessel; and the boilers are so arranged that any number of them can be cut off."

"While so much has been said as to the construction and outward appearance of this fine vessel, the interior arrangements qualify her to occupy the high position she is to hold as one of the first passenger steamers belonging to the port of Liverpool, or indeed of any other port in the world. She has ample accommodation for 1,700 passengers, of which sufficient space is allotted to accommodate 200 first-class or saloon passengers, and the remainder to the accommodation of 1,500 intermediate and steerage passengers, besides a crew of 150 all told. The *City of Berlin* has her saloon amidships, a position which experience has shown to possess many advantages, and to add greatly to the comfort of passengers. This saloon is a noble apartment, measuring 44 feet in length by 42 in width. Longitudinally it is divided into three spans by two ranges of handsome walnut columns surmounted by elegant Corinthian gold capitals. The saloon, which stretches from side to side of the ship, affords ample room for four ranges of tables placed longitudinally, and providing comfortable sitting room for all the cabin passengers she can carry. Of the general aspect of the saloon it would be difficult indeed to speak in terms of exaggerated commendation. It is lighted in daytime by an exceedingly elegant and chaste cupola skylight, the walls of which, like the ceiling of the saloon, are painted and panelled in white, enriched with gold mouldings; the cornice moulding of the saloon being richly adorned in mat and burnished gold. A dado runs round the saloon, from which rise engaged Corinthian columns of walnut wood, the flutes and capitals of which are of gold. Between each two of the columns last referred to there is a panel framing of rich variegated walnut wood, and in the centre of each panel there is a circular side

light, by means of which, and the skylight already mentioned, a complete flood of modulated light is diffused over the whole apartment, and a kindred degree of illumination is afforded at night by an array of lamps, suspended by silver supports from the ceiling. The settees are of dark walnut wood, and the whole of the seats and sofas are richly upholstered in dark purple velvet, which forms a pleasing contrast to the rich carpet and crimson silk blinds of the side lights. Each end of the saloon presents a blaze of mirrors. In short, nothing has been omitted which could gratify the eye of cultivated taste, and nothing has been introduced with which even the most fastidious might be offended. It is further furnished with a piano of excellent quality and tone, and is supplied with a library of select books for the use of passengers."

The Inman Company have been particularly fortunate in the gentlemen they have secured to command their vessels, many of whose names are as familiar as household words in the mouths of travellers across the Atlantic. Among these may be mentioned Captain Kennedy, for many years designated as Commodore of the Inman fleet, and now Commander of the *City of Berlin*; Captain Samuel Brooks, the Commander of the *City of Richmond*; and Captain Leitch, Commander of the *City of Chester*. The first-rate qualities of these gentlemen, together with those of Captain Tibbits, Mirehouse, and others, are well known, and inspire with the greatest confidence those who may choose their passage in the ships of the Company.

It was an Inman steamer—the *City of Paris*—which took out Prince Arthur to Halifax, in August, 1869, and its books are inscribed with the names of hundreds of noble passengers. It is with a justifiable pride that Mr. Inman is entitled to look back upon his labours of twenty-four years. He is still actively engaged in superintending the affairs of the company, and has now the co-operation of his son, Mr. Ernest Inman, who has for some time been taking part in the management of the concern, which augurs well for the continued success of the Inman Line. We need not do more than glance at the list of vessels and their progressive size, power and luxury, to show that the Inman Company in the race of improvement which is the rule among the great Liverpool Steamship Companies will as heretofore be found in the first rank. Such a record as that above given is not often to be found in the commercial history of the world, and not at all out of Great Britain.

CORRESPONDENCE.

FOG-SIGNAL FOR THE TUSKAR.

To the Editor of the "Nautical Magazine."

SIR,—If you remember, I once before called your attention to the want of a good "fog-signal" on the Tuskar, a rock on the S.E. extreme of Ireland.

I have been passing it twice a week, more than four years—running between Bristol and Wexford—and must many times have passed very close without seeing it, and many times have made the rock when you could not see the lighthouse tower; during all this time I can truthfully say I have never heard the fog-bell on it but once, when there was a breeze and I was to leeward of the sound, and I can assure you I am not deaf.

If there is further evidence wanting on the subject, look at the narrow escape of the *City of Brussels*, *Guiding Star*, and *Loch Laggan* with their human freight.

I hope the authorities will soon help us by placing something there that can be heard in time to warn us of the danger. By doing so they will ever be remembered in my prayers, and, I venture to think, in the prayers of others also.

Yours very truly,

W. A. LEAVELL,

Master S.S. *Briton*.

Wexford, July 18, 1875.

[We advise our correspondent to bring this matter under the notice of the Commissioners of Irish Lighthouses, Dublin.—Ed.]

PORT NATAL.

To the Editor of the "Nautical Magazine."

SIR,—I am not acquainted with any modern account of Port Natal, so perhaps a few remarks from one who knows the place well may not be unacceptable to the readers of your magazine. It is a notorious and humiliating fact that although thousands of pounds have been spent upon its breakwater it is yet as far from being a port as ever it was. Nay, if anything, matters are worse, for it is traditionally reported that years ago vessels have sailed in drawing 14 ft. 6 in., but now 11 ft., and a favourable bar for that draught, is the limit at spring tide, and no sailing in at all is possible, it being always necessary to take steam. Inside, matters are

worse, for the harbour is gradually filling up, there not being more than 10 ft. anywhere in the place at low water. I may say that every vessel is aground at low water of spring tides, but as the bottom is sand there is not much danger unless the vessel lies on an anchor or chain. For a long time last year, when vessels drawing 10 ft. 6 in. had to wait for springs and a favourable bar before they could come inside, all above that draught had to lighten outside at a charge of 10s. a ton. Last December, eight vessels were outside waiting to come in, some only drawing 10 ft., when a south-easter came on, and the *Transvall* and *Star of Wales* were driven ashore, broken up in half an hour, and all hands lost. The *Pelham* and *Umvoti* were dismasted, the *Fairy* lost her rudder, and, singular to relate, when it was all over, not one of the vessels outside had an anchor left, for in every instance on the chains being hove in at the termination of the gale, the anchors were all gone; the vessels had simply been kept from going ashore by the strong current from the River Umgeni, they having all drifted to the mouth of the river. I was an eyewitness to this fact. Such, then, is the state of things in Natal outer roads. The number of anchors and chains lost there is almost incredible, and, as they are rarely recovered, the ground is quite foul because of them, so much so, that a vessel is almost sure to hook one when heaving up her anchor. The tug, when it has a leisure day, goes out and recovers some, but that is very seldom. When bringing up in Natal Roads, I would advise shipmasters to give a good scope of chain, and carefully look to the pins of the shackles as the chain is paid out, and keep the last shackle just below the water's edge. There is a kind of a custom to keep a shackle close to the windlass ready for slipping, but as the depth of the water at the anchorage is from 8 to 10 fathoms, it follows that the next shackle is about at the bottom, and when the ship is riding to the long, heavy swell this shackle pounds on the bottom as the chain tightens and slackens, and eventually the pin comes out and the ship is adrift, most likely in a calm, and at night, when the watch is taking a nap on the strength of its being a fine night. Such was the loss of the fine ship *Tugela*, which came ashore on a fine night before any one was aware of it, and there is no doubt that is the reason of numbers of so-called partings in light winds and calms. A shipmaster cannot be too careful about his ground tackle in Natal Roads. Some advise shipmasters in want of supplies to call at Natal; but I would most emphatically say, if you are able to get to Cape Town, make the best of your way there, and give Natal a wide berth. If you anchor there, it may be some days before you are communicated with if the bar is rough. If you want water, it is 5s. per 100 gallons ashore, and you would have to hire tanks or casks to take it off to the ship, and the lighterage would be 10s. a ton, and the way

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vessels roll about outside would make it difficult and dangerous to get it on board. Supplies of all kinds are dear at Natal. Several large vessels have lately brought coolies there from India, but, fortunately for them, they had no cargo to land, and wanted no supplies, therefore their detention was short, and they proceeded with their ballast cargoes to New York or London, as the case might be. No coolie vessels have been lost yet since immigration has been resumed; but during the former period, of immigration, 1865 and 1866, several ships were lost. Large ships coming to such a place run great risks, and are in danger of losing one or more anchors.

Now, regarding inside. The regular traders, which are vessels from 200 to 350 tons, take three months discharging and loading. It is very rare indeed that one gets away in less time; this is such a "sleepy hollow" kind of a place that no one dreams of hurrying, and there is no competition. I may say, that the ships in Natal answer the purpose of warehouses, for there are none but a rickety, galvanized iron structure or two. The serious drawback to the Colony is want of transport, it being all done by the old-fashioned ox-waggon; and as the produce comes down it goes direct to the ships; it is never stored up. It is quite a common thing for a merchant to engage wool, of which he has just received the way bills, by a certain ship, and perhaps the wool is in the Free State or Transvaal, and will be two months before it is in Durban. Regarding port expenses, I think they are much the same as they ever were—

Towage.—150 tons, £10; 150 to 250 tons, £12; 250 to 300 tons, £14; 350 tons, £15.

Pilotage.—50 to 100 tons, £2; 100 to 200 tons, £3; 200 to 300 tons, £4; 300 to 500 tons, £5. Light dues 2d. per ton.

The port charges of a vessel of 300 tons would be between £40 and £50; it depends on the number of shiftings. Claims, too, are a serious item in a vessel's expenses, for, it will be hardly believed, no receipts are given either by the landing agents or the railway for goods delivered from a ship, and some of these goods are sure to be lost or mislaid, for which the captain having signed bills of lading, and not being able to produce the goods, although quite sure he has landed them, has to pay; and they have a nice easy-going way of waiting till the ship is ready for sea, and then getting an order to stop her. When under that pressure, the captain, as a matter of course, pays rather than be detained. And months afterwards, at the Railway Company's sale of unreclaimed goods, these missing goods will form one of the lots. This is an event of constant occurrence.

The light and the signals (Commercial Code) on the bluff at Natal

are both first-rate, and shipmasters will always get a reply, when outside, to their Signals to the Bluff.

CHARLES REEVES,
"Umvoti," of Aberdeen.

To the Editor of the "Nautical Magazine."

SIR,—May I trespass on your columns to give publicity to an act of injustice of which the pilots in these ports complain with good cause, and which should be known to all shipowners and captains.

A deputation of twenty-five pilots, duly licensed, belonging to Kertch and the Azof, complain that when ships arrive at Constantinople, the captains—especially those who visit these waters for the first time—are surrounded by men calling themselves pilots, but whose certificates, of which I have seen many, show that they are principally appreciated as interpreters and stevedores, who offer their services, many of them being totally ignorant of the navigation of the Kertch Straits and the Azof, and many have consequently brought the ships into trouble during nine years that I have resided here. Three valuable ships have been run on the breakwater or on rocks within the last twelve months, all of which had Constantinople pilots on board.

It is necessary the captains should know that there are many good pilots here who pay their tolls to the Government for a license, and who are at all times ready to accompany ships up the Azof, with which they are well acquainted, for a moderate remuneration.

I am also glad to inform those interested, through you, that I have lately urged on the Governor the importance of a pilot station near Cape Tabli or on board the guard-ship to bring vessels in through the most difficult part of the Crimean Bosphorus, and His Excellency having written to the Minister on the subject, gives me good hope that such a station will shortly be established.

I am bound to add that there are many respectable, steady men among them who reckon solely on their profession for maintaining their wives and families, while the saving of expense, as well as risk, to the captains, is well worthy of consideration.

Your most obedient servant,

PETER BARROW,

Kertch, July 29, 1875.

H.B.M.'s Consul.

MARINE INVENTIONS.

[On receipt of a summarised description of any new invention connected with ships or navigation, the Editor of the *Nautical Magazine* will publish, under the above heading, a brief account of it.]

A NEW FOG-HORN.—We have just seen a patented fog-horn that has been wanted for many years. It is on the piston and cylinder principle. The arrangement is highly scientific. There are two reeds in it, the one is a bass note and the other is a certain number of notes higher: the effect of this arrangement is that the higher note carries on and increases the intensity of the sound of the lower note. One great advantage in a mechanical fog-horn is that the note is always certain. An inspector approving of a horn to be blown by the mouth can never be certain that its maximum power will be used—but this is not the case with a mechanical horn. Another advantage is that it can be used to indicate the tack of a ship, by making combinations of long and short sounds. We cannot too highly recommend it. It has the approval of the American Government, and, we believe, of the Deputy Master of the Trinity House, and Board of Trade officers in this country.

OUR PARLIAMENTARY RECORD.

The Merchant Shipping, and Unseaworthy Ships' Bills.—The following chronological table of events, in connection with these Bills, is given for the purpose of general reference. It is not necessary here to enter into further details.

Thursday, July 22nd, 1875.—The order for the committal of the Merchant Shipping Acts' Amendment Bill discharged. The Plimsoll scene.

Monday, July 26th.—Sir CHARLES ADDERLEY gave notice of intention to introduce the Unseaworthy Ships' Bill on Wednesday next.

Wednesday, July 28th.—Unseaworthy Ships' Bill introduced by Sir CHARLES ADDERLEY, and read a first time.

Thursday, July 29th.—Mr. PLIMSOLL apologised for his use of unparliamentary language.

In Committee a resolution was passed authorising the remuneration of any officer who might be appointed under the authority of any Act of the present Session to inspect unseaworthy ships.

Friday, July 30th.—Mr. BATES, the member for Plymouth, made a

statement as to the charges brought against him by Mr. PLIMSOLL. Unseaworthy Ships' Bill read a second time.

Saturday, July 31st.—Mr. BATES moved for the appointment of a Select Committee to inquire into the charges made against him by Mr. PLIMSOLL. This was not, however, granted; an amendment by Mr. REED, "That, in the opinion of this House, no stain rests upon the character of the hon. member for Plymouth in consequence of the statements made in this House by the hon. member for Derby, on the 22nd of July," being accepted by Mr. BATES, and carried unanimously.

The Unseaworthy Ships' Bill passed through Committee of the Commons, on *Monday, August 2nd*. The following are the dates of the subsequent stages of this Bill:—Report on Committee, *Thursday, August 5th*; third reading in the Commons, and first reading in the Lords, *Friday, August 6th*; second reading, *Monday, August 9th*; passed through Committee, *Tuesday, August 10th*; and third reading, *Wednesday, August 11th*. The Bill received the Royal Assent on *Friday, August 13th*.

Overloaded Ships, Thursday, July 22nd.—In answer to Mr. E. SMITH, Sir CHARLES ADDERLEY said: No officer of the Board of Trade at out-ports has, with or without authority from the Board in this case, power or means to stop a ship as overloaded. The Act only gives the Board of Trade power to order officers of Customs, acting under express directions by the Board of Trade, to stop ships duly reported to them, and notice of such direction is given to the master or owner. I am considering the question of appointing officers of a higher grade at certain ports, who might exercise a superintending power over the surveyors. But I do not think that under the Act I could delegate to any local officer the power to stop a ship. As to the last part of the question, I should be glad if Parliament would in any way mitigate the extreme difficulty of the task it imposes on the Board of Trade; and I am astonished at the few mistakes the Board has made; indeed, the member for Derby has often stated the fact that of all ships detained scarcely any have been proved seaworthy. (Hear, hear.)—Mr. E. SMITH said that as the right hon. gentleman seemed to make a distinction between the words "stopping" and "detaining," he would repeat his question on a future day.—Sir CHARLES ADDERLEY said he had made no such distinction—"stopping" and "detaining" were exactly the same.—Mr. NORWOOD asked whether the officer would be obliged to show his authority to the captain?—Sir CHARLES ADDERLEY said he saw no objection whatever to the telegraphic or other order being shown to the master, and it was usually done.

Natal, Friday, July 23rd.—In the House of Lords, Lord BLACHFORD called attention to proposed alterations in the Constitution of Natal, and moved for papers, which, after interesting speeches from the Earl of CARNARVON and Lords CARLENGFORD and KIMBERLEY, was agreed to.

The Detention of Unseaworthy Ships, Monday, July 26th.—In answer to Mr. E. SMITH, Sir CHARLES ADDERLEY said: The Board of Trade officers have not power to detain any ship. They report to the Board of Trade, and the Customs' officers detain by directions from the Board of Trade. It is proposed to institute a higher class of Board of Trade surveyors at the principal ports; and I hope the Bill which I have given notice of for Wednesday will give the requisite powers.

The Merchant Shipping Acts, Monday, July 26th.—In reply to Lord F. HERVEY, Sir CHARLES ADDERLEY said: I hope the Government Bill to amend the Merchant Shipping Acts will be among the earliest measures of next Session. I have no intention of attempting a consolidation Bill at present, but the House is aware that I have prepared and published a Digest of all existing Merchant Shipping Acts with a very full and complete index, which may to a great extent serve the purpose of a Consolidation Act.

Rocket Apparatus, Monday, July 26th.—In reply to Lord C. J. HAMILTON, Sir CHARLES ADDERLEY said: The Board of Trade have communicated with foreign Governments on the subject of the rules for using the rocket apparatus now generally adopted, and have sent them copies of the English rules, with a view of their being translated and put on board foreign ships. The Board of Trade have always had printed rules for using the apparatus inserted in logs and other ship papers, and they require every master and mate to be examined in the use of the apparatus before he gets his certificate. Believing that the present apparatus is the best yet submitted, the Board of Trade have caused metal tablets with regulations to be furnished to British shipowners free of charge, to be put on board under directions of their surveyors. Her Majesty has commanded that two of these tablets shall be put on board her royal yacht. The tablets are also prepared in German and French, and can be procured in this country, and copies will be sent to foreign Governments. (Hear, hear.)

Screw-Steamers carrying Grain, Tuesday, July 27th.—Replying to Mr. WILSON, Sir CHARLES ADDERLEY stated that the Government had no intention of introducing a Bill relative to screw-steamers carrying grain, framed in accordance with the terms referred to by the hon. member. Such terms would have provided for vessels of this class being constructed with a double bottom for water ballast, and a certificate being given them as to their safety for carrying grain or seed cargoes, in addition to provisions for shifting boards, the carrying of grain in bags, &c.

Merchant Shipping, and Unseaworthy Ships, Thursday, July 29th.—Numerous questions were put and replied to on the above subjects. Mr. MACDONALD leading with a question to Sir CHARLES ADDERLEY relative to the *Alcedo*. Sir CHARLES replied as follows: The hon. member

asks me whether my attention has been called to the conviction of a shipowner against whom I myself directed a prosecution for sending a dangerously-rotten ship to sea. As regards any further precautions having been taken, the same arrangements still exist at Cardiff as existed when the *Alcedo* was detained under them. As to the supposed loss of the *Alcedo* and her crew, the *Alcedo* was not lost, but remains at Cardiff, where she was detained, and has been, or will be, broken up.—Sir CHARLES ADDERLEY said, in reply to Mr. MACIVER, that the *Nimrod* and *Alcedo* were both detained in port as unseaworthy, were both condemned, and the owners of both were convicted, fined, and imprisoned. I think that Section 11 of the Merchant Shipping Act of 1871 should be strengthened, and there was a clause in the Government Bill for that purpose. But I think the indirect operation of that clause has been effective in the way of deterring people from sending unseaworthy ships to sea. It is true that the only convictions yet obtained under the 11th Section of the Act of 1871 are those of the owners of the *Nimrod* and *Alcedo*, and, of course, in cases where ships go to the bottom evidence can rarely be obtained; but the principle of the law is to convict offenders, and not to anticipate offence by inspecting all. No one doubts that there are unseaworthy ships, and probably more than have been detected, but the Board of Trade has successfully hit many, and has very successfully avoided involving the innocent in its prosecutions.

Public Prosecutor, Thursday, August 5th.—In answer to Sir E. WILMOT, Mr. CROSS said that the subject of the appointment of a Public Prosecutor had been long under his consideration, and he was anxious to bring it to a successful termination. He could not give any pledge, or make any distinct promise, as to next Session, but he would lay on the table some correspondence on this subject which was carried on during the time when his predecessor was in office.

Merchant Shipping, Friday, August 6th.—Mr. REED, on behalf of Mr. PLIMSOLL, gave notice that next Session he would move for a Select Committee to inquire into the subject of marine insurance, to investigate the state of the law thereon, and to report if any and what changes were desirable; that he would introduce a Bill to extend to merchant seamen whose vessels were within five miles of the coast-line of the United Kingdom the provisions of the Employer and Workmen Act, which abolishes imprisonment for breach of contract; and that he would move for a Committee to inquire into the manner in which the Unseaworthy Ships' Act, 1875, and previous Acts relating to Merchant Shipping, had been administered by the Board of Trade, and into other matters concerning that department.

British Vessels under Foreign Flags, Monday, August 9th.—Sir CHARLES ADDERLEY stated, in reply to Mr. NORWOOD, that the number of British

vessels transferred to foreign flags, since the 1st of January, 1875, was 875.

Unseaworthy Ships, Wednesday, August 11th.—Sir CHARLES ADDERLEY, in reply to Mr. REED, said the question incorrectly assumes that there were not more than two prosecutions under the 11th Section of the Act of 1871. With reference to the 515 cases mentioned, the chief reason why more prosecutions have not been made is that the Section only provides for cases in which the owner or others actually send a ship to sea in an unseaworthy state. The Board of Trade have, under the 12th Section of the Act of 1873, stopped ships from going to sea, thereby intercepting the offence which would come under the 11th Section of the Act of 1871. There was a clause in the dropped Merchant Shipping Bill which had been passed in the Unseaworthy Ships' Bill, elaborated and improved by the hon. member for Durham, by which the Board of Trade will be empowered to proceed against persons who attempt to send or take unseaworthy ships to sea. This, with improved legal machinery, will probably make the law much more effective in future.

Burning of the "Cospatrick," Wednesday, August 11th.—In answer to Mr. HAYTER, Sir CHARLES ADDERLEY said the Court which inquired into the loss of the *Cospatrick* by fire made three recommendations—1. That bulkheads in wooden ships should be made to separate the forepeak, as in iron ships the collision bulkhead does. This has been already attended to. 2. That some better regulation should be made in emigrant ships as to the stowage of boats, and that they should not be stowed on board keel upwards. This has been referred to a Departmental Committee, whose labours have been delayed by the illness of Captain Forster, the chief emigration officer of the Board of Trade. 3. That a boat drill should be established in all emigrant ships. This has been recommended to shipowners by a circular, but it is not a matter that could be dealt with imperatively by order or by legislative enactment.

Prorogation of Parliament, Friday, August 13th.—Parliament was prorogued by Royal Commission, after the reading of the usual Royal Speech, until the 29th of October next.

DIRECT ACTING SPRING SAFETY-VALVE,

ON THE MECHANICAL PROPORTIONS AND GEOMETRY EMBODIED IN THE CONSTRUCTION OF A DIRECT ACTING SPRING SAFETY-VALVE, AND ON CERTAIN PHENOMENA ATTENDING THE BEHAVIOUR OF THE STEAM AT AND ABOUT THE ESCAPING ORIFICE.

THERE are five essential elements appertaining to a safety-valve worthy of the name it bears.

1st.—That under no conditions, whatever, of the fires, should the pressure rise in the boiler above that due to the load placed on the safety-valve.

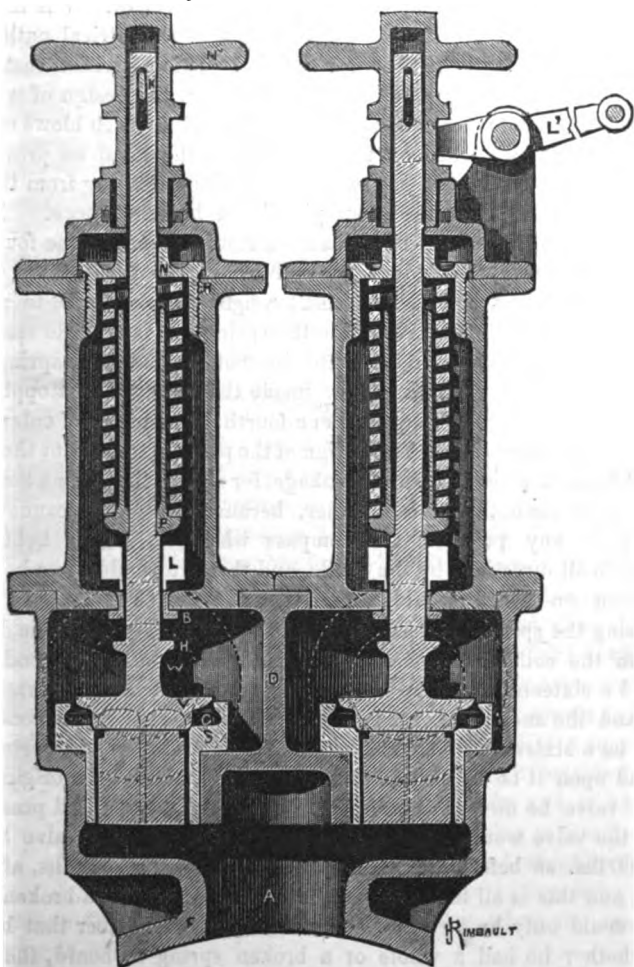


FIG. 1.

2nd.—The relieving power of the valve should be twice the generating power of the fires.

3rd.—The valve should return to its seat with the least practical loss of pressure.

4th.—It should perform its work in the least possible amount of time, and

5th.—It should be perfectly automatic.

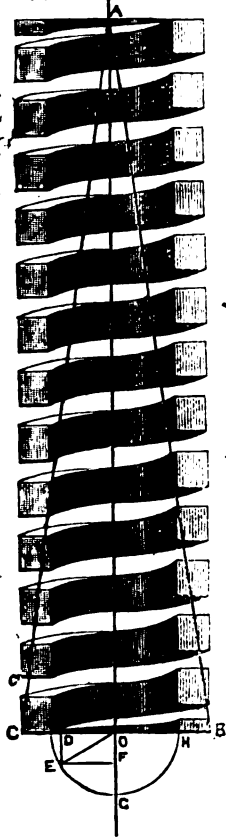
To fulfil the above conditions, the valve, Fig. 1, has been designed. F is the flange which fits the top of the boiler. A is the opening to the boiler, and in common communication with both valves. V is the valve and S the head of the seating thereof, by the geometrical outlines of which the surrounding chamber C is formed. D is a division cast in the box separating the upper part of a pair of valves, the design of which is to prevent the waste steam escaping from the valve which blows off first, from exerting its influence on the top of the other, and so prevent its neighbour from rising. W are two waste passages leading from the box, which are connected to the waste-pipe by a breeches-piece. H is a collar cast on spindle, and at a distance from B equal to one-fourth the diameter of the valve. B is a brass bush in the base of the column enclosing the spring, and L is a small weight resting on B, to prevent water or dirt passing through beside the spring. P is a pintle resting on a shoulder on the spindle, and on which the bottom end of the spring rests, the barrel of which is continued up inside the spring, but stopping at a distance from the top of it equal to one-fourth the diameter of valve, when the load is on the spring. The design of the pintle is to prevent the spring moving from its place in case of breakage, for should this spring break, the broken ends cannot pass each other, because the spring cannot move laterally to any point of the compass whatever, but is held in its position in all directions by the pintle, and the ship would come home and no person on board would know that there was a broken spring. Supposing the spring to break in the middle of its length, and the distance between the coils to be one-eighth of an inch, then the top end would descend a sixteenth, and the bottom end would ascend a sixteenth of an inch, and the mean fall or shortening of the spring in its centre line would be a sixteenth of an inch. Let the deflection of the spring with the load upon it be $1\frac{1}{2}$ ", equal to 24-sixteenths, and let the original load on the valve be 60 lbs., then $\frac{60}{24} = 2\frac{1}{2}$ lbs. equal the reduced pressure at which the valve would blow off. So that instead of the valve blowing off at 60 lbs. as before the break, it would blow off at $57\frac{1}{2}$ lbs. after the break, and this is all the difference between a whole and a broken spring. and it could only be by close observation of the engineer that he could tell whether he had a whole or a broken spring on board, the $2\frac{1}{2}$ lbs.

earlier blow off being his only means of discovery. N is a brass nut with a fine thread on it and a hexagonal top with which to screw it down ; and R is a distance piece, the size of which is taken when the proper load is on the spring. K is a cotter, through the point of which the padlock passes. H' is a cross-head, the lower end of which is let into a brass bushed cap to a depth equal to half the diameter of the valve, and with two collars, between which the forked end of the easing lever L fits, and with two handles with which to turn the valve on its seat in case of dirt getting between the faces, both valves being so fitted.

ON THE GEOMETRY EMBODIED IN THE CONSTRUCTION OF THE SPRING.

Fig. 2.—Let A O be any straight line produced through G indefinitely.

FIG. 2.



On A set off the isocles triangle B A C, such that the angles B A O, C A O, contain each $7\frac{1}{2}^\circ$ (correctly it is $7^\circ 40'$). Select any point O in A G, join B C, so that O B and O C are each at right angles to A G. Set off O B into three equal parts, of which O H is equal to two parts, on O as a centre. With O H as radius, describe the semicircle E G H. On G as a centre with the same radius, set off the arc G E equal to 60° , draw the lines E O, E D, E F. E D is the sine of the angle D O E, and is equal to the side of the square of steel of which to make the spring. And E F is the cosine of the angle D O E, and is equal to the pitch C C', and E F will divide O A into $19\frac{1}{2}$ equal parts, equal to 18 complete coils and the ends. And the angle B A C is the angle of stability of the spring, and contains 15° . And all springs constructed on this principle, whether of a 16-inch wire, or of a 6-inch bar of steel, are each proportional to one another, and if the results obtained from one be good, the others must be good also. They are also all unbreakable. The standard spring, from which the author has made his experiments and calculations, is made from a $\frac{1}{2}$ " square bar of the best cast steel and contains .25 of a square inch. The spring is 2" inside diameter, 8" outside diameter, 18 complete coils and the ends, and is $11\frac{1}{2}$ " long. The working load on this spring is 600 lbs., being one-sixth part of its breaking load when hardened to a temper just sufficient to break it, and the

load deflects the spring exactly one inch, so, that when the load is on, the spring is $10\frac{1}{2}$ " long.

TO FIND THE PROPER LOAD FOR ANY OTHER SPRING.

Rule.—As the section of metal of a $\frac{1}{4}$ " square bar of steel, .25 of a square inch is to 600 lbs., so is the section of metal of the desired spring to the load to put on it. Thus: It is required to find the load to put upon a $\frac{3}{4}$ " square inch spring, the section of metal of which is .56 of a square inch.

Let A equal the section of $\frac{1}{4}$ " spring = .25 of a square inch,

And L equal the load on it = 600 lbs.;

And S the section of $\frac{3}{4}$ " spring = .56 of a square inch,

And L' the load sought.

Then $L' = \frac{S L}{A}$ or,

As .25 : 600 :: .56 : 1,344 lbs. equal the working load to put upon a $\frac{3}{4}$ " square spring, the dimensions are: Inside diameter 3 inches, outside $4\frac{1}{2}$ inches, 18 complete coils and the ends, and the length $17\frac{1}{2}$ inches. The deflection of this spring with the load on it is just $1\frac{1}{2}$ ", by which the lift of the valve is proportional to its diameter. For example—Let there be 2 valves, one 3" diameter and with a $\frac{1}{4}$ " spring on it, deflection 1"; and lift of valve $\frac{1}{3}$ ", and let the other valve be $4\frac{1}{2}$ " diameter with a $\frac{3}{4}$ " spring on it, deflection $1\frac{1}{2}$ ". Let both valves be loaded to 85 lbs., which represents the relative loads on the springs. Then, as 3" : $\frac{1}{4}$ " :: $4\frac{1}{2}$ " : $\frac{3}{4}$ " = lift of $4\frac{1}{2}$ " valve, and the deflection of springs so constructed is directly as the inside diameter; for our $\frac{1}{4}$ " spring deflects 1" with its load on it—just half its inside diameter—and our $\frac{3}{4}$ " spring deflects $1\frac{1}{2}$ " with its load on it—just half its inside diameter; and so with all other sizes. And this type of spring viewed as a register of force is absolutely correct between the limits of 1 lb. and the load that produces permanent set.

CHIEF SURVEYOR'S FORMULA.

Given the load on the valve to find the strength of steel of which to make the spring.

Rule.—Multiply the load on the valve in lbs., by the helical diameter of spring and divide by 11,000, then extract the cube root thereof, and the remainder is the side of the square of steel in part of an inch. Thus—

Let L equal the load on spring, and

D equal the helical diameter.

Let C equal 11,000 for square steel, and

D equal the side of square of steel.

$$\text{Then } D = \sqrt[3]{\frac{L \times D}{C}}$$

ON THE PERFORMANCE OF THE SPRING VALVE UNDER THE BOARD OF TRADE TESTS.

The usual test of the Board of Trade is to test the relieving power of

the valve by the generating power of the fires. For that purpose, the boilers are filled with water until it is near to the top of the glass-gauge, then shut off all inlet and outlet passages to and from the boiler except the safety-valves. Then fire away as hard as they can pelt for 20 minutes, letting all the steam generated pass through the safety-valves, and if they are not capable of carrying it away (which no ordinary valve is) then the pressure rises above that at which the valve is loaded to blow off. The valve before us, however, admits of no accumulation whatever. The following Table gives its performance on board the *S.S Windsor Castle*, belonging to Donald Currie and Co., of London :—

1	2	3	4	5	6	7	8
Time at which the Valve rose from its seat.	Time at which it returned to its seat.	Pressure by gauge at which the Valve rose.	Pressure by gauge at which the Valve closed.	Accumulation of Pressure.	Reduced pressure below the blow off pressure.	Difference between the greatest and least pressures.	Time between opening and closing of the valve.
MIN. S.	MIN. S.	LBS.	LBS.		LBS.		SEC.
0 12	0 23	63	62·25	Nothing.	0·75	0·75	11
1 2	1 16	"	62·25	"	0·75	0·75	14
2 40	2 50	"	62·50	"	0·50	0·50	10
3 10	3 32	"	62·00	"	1·00	1·00	22
4 0	4 20	"	62·25	"	0·75	0·75	20
4 48	5 11	"	62·50	"	0·50	0·50	18
5 45	5 48	"	62·50	"	0·75	0·75	8
6 45	7 2	"	62·25	"	0·75	0·75	17
7 54	8 10	"	62·00	"	1·00	1·00	16
8 59	9 21	"	62·00	"	1·00	1·00	22
9 52	10 21	"	62·00	"	1·00	1·00	29
10 35	11 2	"	62·00	"	1·00	1·00	27
11 12	11 52	"	62·00	"	1·00	1·00	40
12 5	12 43	"	62·00	"	1·00	1·00	38
12 57	13 28	"	62·00	"	1·00	1·00	81
13 45	14 27	"	62·00	"	1·00	1·00	42
14 45	15 18	"	62·00	"	1·00	1·00	33
15 41	16 11	"	62·00	"	1·00	1·00	30
16 37	16 55	"	62·25	"	0·75	0·75	18
17 11	17 25	"	62·25	"	0·75	0·75	14
17 45	18 1	"	62·50	"	0·50	0·50	16
18 23	18 39	"	62·25	"	0·75	0·75	16
19 5	19 22	"	62·25	"	0·75	0·75	17
19 57	20 13	"	62·25	"	0·75	0·75	16
		63	MEAN		MEAN	MEAN	MEAN
			62·187		·833	·833	21½

Column No. 1 gives the time at which the valve rose from its seat—

viz., no hours, no minutes, 12 seconds past 12 o'clock at midnight, on the 20th of July; and it closed, as shown in Column No. 2, at no hours, no minutes, 23 seconds past 12 o'clock. So that it was only 11 seconds between the instant of rising from its seat, and the instant of closing again; and the reduction of the pressure in that time was three-quarters of a pound. The table contains the 20 minutes' tests. The valves blew off at 63 lbs. and closed again at a mean of 62.137 lbs., and the mean time occupied in its performance was $21\frac{1}{4}$ seconds.

Corollary.—No safety-valve can have any comparative merit for efficiency into which the time between opening and closing does not enter as one of the essential elements in composition and resolution.

As Mr. Trail, C.E., R.N., Chief Surveyor to the Board of Trade, and one of his assistants, Mr. Samson, C.E., R.N., are now engaged on a most extensive and exhaustive series of experiments on springs, and as the results of those experiments will form the last of my articles on this subject, I will take leave of my friend ("The Spring") for the present; but I have seen enough of them to say—They will form an inestimable treasure to the engineer's knowledge.

My next article will be on the flow of the steam through the orifice of the valve.

MOLECULAR VORTEX.

The Works of the "Ant" and the "Bee,"
Manchester, August 19th, 1875.

BOOKS RECEIVED.

Sixth Report on the Operation of the Contagious Diseases Acts. London: Harrison and Sons. 1875.

On the 23rd June, the House of Commons devoted an afternoon to the discussion of a Bill introduced by Sir H. Johnstone for the repeal of these Acts. The Bill was rejected by a majority of 182. In connection with this subject considerable interest and excitement has for some time been produced throughout the country, mainly owing to the exertions of a society, chiefly of ladies, formed for the purpose of obtaining a total repeal of the Acts, and by the methods adopted by the society for obtaining that object. Another association, formed for the opposite purpose of promoting the extension of these Acts, is also in existence, and we have now before us the Sixth Report of this association. The Report deals in an interesting manner with the results obtained by the legislation now in force, in its physical and moral aspects, and also

with the constitutional objections to the Acts. As regards the physical point, the Acts have effected very great good in a totally inoffensive way. As regards the moral results of the Acts, sufficient evidence and statistics are given of their deterring and reforming influences to justify fully and triumphantly their retention on the Statute Book. We heartily recommend this little pamphlet to the consideration of all thoughtful minds. So long as the results of the operation of these Acts continue to give proof in any marked degree that they are improving the condition of society, so long as they do not, by maladministration, interfere with persons not contemplated to be brought under their operation, they will receive deserved support and confidence.

Light as a Motive Power. A Series of Meteorological Essays by Lieutenant R. H. Armit, R.N. Vol. I. London: J. D. Potter, 81, Poultry, E.C. 1875.

WE have not much to say in praise of this book. The author in writing upon a scientific subject does not bring to his labour a scientific intelligence. He has apparently read much, but not deeply, and his work everywhere shows unmistakable signs of inconsequent generalization, of ignorance concerning the facts and aims of true science, and of misapplication of those facts which are generally known and understood. It may be said that the author is making a path for himself in the search for true knowledge, regardless of the beaten tracks made by distinguished natural philosophers in times past and in our own day. For ourselves we prefer not to follow where Lieutenant Armit would fain lead, for in endeavouring to arrive at the meaning of his book, we have found ourselves completely mystified, and bewildered by him. We agree with him in a remark on page 14 that the treatment of so vast a subject as the atmosphere is one requiring considerably greater grasp of thought than he can lay claim to, and therefore we are not all disposed to follow him in his strange theories.

Report of a Tour of Inspection of European Lighthouse Establishments made in 1878. By Major George H. Elliot, Corps of Engineers, U.S.A., &c. New York: D. Van Nostrand. London: Trübner & Co., 1874.

It is interesting to know what is the candid opinion of an intelligent and refined American gentleman regarding any of our British institutions. In the work now before us such an opinion is to be found in reference to our lighthouse system, and we have great pleasure in recording the fact that Major Elliot's report is a cordial tribute to its efficiency. This is extremely gratifying from a national point of view, and is highly creditable to the Lighthouse Authorities of Great Britain and Ireland. Of the French system Major Elliot speaks also very highly. The only thing

in regard to which the Americans appear to be in advance of us is in the matter of coast fog-signals, but after the recent experiments of Dr. Tyndall, and the Trinity Board, and the consequent vigorous action taken by the "Elder Brethren," we need not fear that our country will long remain behind in the matter of fog-signals. The book itself is highly interesting. The various statements made are completely trustworthy, having all been furnished to the author through official sources, and it may be fairly said that no work upon the subject of lighthouses is so comprehensive and full of accurate information as this report of Major Elliot's. Not only will it be most serviceable to the authorities in the United States, but it will prove exceedingly useful to those in our own country who are connected with lighthouse matters. To all who are interested in the subject we strongly recommend this well got up, elaborately illustrated, and thoroughly trustworthy book.

The Papers and Proceedings of the United States Naval Institute.

Vol I. New York: D. Van Nostrand. London: Trübner & Co. 1875. This institute was organised nearly two years ago. Its object being the advancement of professional and scientific knowledge in the Navy. Since its establishment, various papers on subjects connected with the United States' Navy, the United States' Mercantile Marine, and some geographical subjects have been read, and in the work now before us are collected together, with the discussions to which they gave rise. The papers generally display considerable ability, and show clearly that in the United States there exists a sound fundamental knowledge of maritime matters which, in time to come, may become so wide-spread in that country, that it will find expression in the development of a powerful Navy and an extensive Mercantile Marine. Our tendency in these days is to place legislative fetters on our maritime interests, and thereby to retard natural and healthy progress. Such a book as this is a small cloud no bigger than a man's hand, but it is a cloud that may rapidly increase, and if we do not exercise proper foresight, the time may come when that cloud, combining with others, will overshadow us and eclipse that glory of which we are now so proud.

Lunars and Lunar Tables, being various Methods of Finding the True Lunar Distance, and thence the Longitude. By W. H. Rosser. London: Jas. Imray and Son, Minories. 1875.

We regard this work as one of great value to mariners, especially to those who take an interest in lunar observations. We are inclined to think, however, that the author might with greater propriety have entitled the book "Lunar Observations considered Practically and Theoretically;" under such a title it would commend itself more directly to those who desire to become better acquainted with the subject of lunars and the

various methods of solving the lunar problem. No less than four of the indirect methods of clearing the lunar distance, all of them valuable to the practical navigator, are given in this work, together with eleven of the rigorous methods requiring no especial tables, and, in addition, eleven examples are worked out by various indirect methods, for which special tables are required. The preliminary observations also contain much useful information on the errors of the sextant and their effect on the observed distance, the manner of taking the observations, the computation of the altitudes, &c., &c., which cannot fail to be most serviceable to the navigator. The work is one which we can confidently recommend to nautical men.

Society of Engineers. Transactions for 1874. Edited by Perry F. Nursey, Member of the Society of Engineers—Secretary. London: E. and F. N. Spon, 48, Charing Cross. 1875.

THIS comparatively young society is doing good work. The present volume contains eight contributions to engineering science well worth reading. Our space does not admit of a lengthened review of the volume, but it is a great pleasure to us to record the doings of a society which has won its way of late years so successfully.

The Policy of Marine Insurance Properly Explained, with a Chapter on Occasional Clauses. By Charles McArthur. Second Edition. London: George Philip and Son, 92, Fleet Street. Liverpool: Philip, Son and Nephew, 51, South Castle Street. 1875.

IN these days when the attention of the people is strongly drawn to the subject of our merchant ships and seamen, and in their belief and sentiments, the British public are led by the prominent voices of sensational enthusiasts, when practical questions are judged entirely by the aid of the emotions, and all facts ignored which are not altogether in accordance with the gushing sentimentalism of the hour; the second edition of such a book as the one now before us is, we fear, not likely to meet with the encouragement which it deserves. The work is a popular treatise upon marine insurance policies, giving in a simple and straightforward way a great deal of accurate information on the subject. No theories are broached, no opinions expressed, facts and facts only are dealt with, and those facts are stated in a perfectly intelligible manner. We venture to think that the majority of our readers are not under the influence of the Plimsoll mania, and therefore such a work as this will be justly appreciated by those who desire trustworthy information on the subject, and who obtain the book on our recommendation. We do not hesitate to commend it strongly for its simplicity and its accuracy. Moreover, it is compact, well printed and inexpensive.

SHIPBUILDING, 1875.

STEAMSHIPS.

Port.	No. of Ships first six months.		No. of Ships added in July.		Gross Tonnage first six months.		Gross Ton. added in July.	
Glasgow	52	...	11	...	50,760	...	9,123
Greenock	11	...	1	...	18,998	...	1,289
Port Glasgow	...	18	...	3	...	8,038	...	1,134
Sunderland	...	12	...	1	...	15,522	...	1,357
Newcastle	...	21	...	3	...	24,433	...	4,609
North Shields	...	5	...	2	...	3,118	...	122
South Shields	...	8	...	—	...	3,095	...	—
Liverpool	5	...	4	...	4,127	...	2,035
Dundee	6	...	—	...	3,276	...	—
Hartlepool	...	11	...	1	...	12,399	...	1,078
Aberdeen	2	...	1	...	1,357	...	643
London	9	...	2	...	4,088	...	55
Belfast	—	...	—	...	—	...	—
Stockton	...	4	...	—	...	4,832	...	—
Kirkcaldy	—	...	—	...	—	...	—
Middlesbro'	...	8	...	1	...	8,657	...	505
Hull	1	...	2	...	3,110	...	3,703
Leith	—	...	—	...	—	...	—
Bo'ness	2	...	—	...	1,841	...	—
Whitehaven	...	1	...	—	...	232	...	—
Barrow	1	...	—	...	1,025	...	—
Whitby	4	...	—	...	4,602	...	—
Other Ports	...	17	...	5	...	1,906	...	1,570
Total		198		37		170,406		27,173

SHIPBUILDING, 1875.

SAILING SHIPS.

Port.	No. of Ships first six months.	No. of Ships added in July.	Gross Tonnage first six months.	Gross Ten. added in July.
Aberdeen ...	5	—	2,815	—
Barrow ...	5	—	4,685	—
Belfast ...	4	1	4,858	1,199
Bristol ...	—	—	—	—
Cowes ...	4	—	874	—
Dartmouth ...	18	2	1,568	869
Dundee ...	6	—	5,249	—
Faversham ...	1	—	89	—
Glasgow ...	29	10	81,267	11,123
Greenock ...	18	—	9,072	—
Hull ...	9	—	645	—
Jersey ...	9	2	818	184
Liverpool ...	12	2	6,747	2,501
London ...	8	2	858	2,000
Middlesbro' ...	1	—	182	—
Newcastle ...	8	1	738	48
Plymouth ...	7	2	1,814	291
Port Glasgow ...	9	2	9,006	2,928
Portsmouth ...	8	—	881	—
Rochester... ..	6	—	282	—
Southampton ...	7	—	521	—
Stockton ...	2	1	2,594	1,126
Sunderland ...	28	8	20,684	8,887
Whitehaven ...	2	2	2,255	1,685
Workington ...	1	—	1,069	—
Yarmouth ...	5	4	145	528
Other Ports ...	96	21	18,077	2,865
Total	293	55	120,138	80,624

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
193	BALTIC—Gulf of Riga—Dome-ness	Alteration in Light.
194	JAPAN—Goto Islands—Fukuye	Reported dangers North-westward of.
195	ENGLAND—South Coast—Dungeness	Delay in Exhibition of New Light.
196	ENGLAND—South Coast—Dungeness	Intended alteration in Fog-Signal.
197	IRELAND—South Coast—Youghal	Additional Tide Light.
198	ENGLAND—Medway River Entrance	Buoy marking Torpedo Ground.
199	GIBRALTAR STRAIT—African Shore—Blanca Point	Discovery of a Sunken Rock near.
200	FRANCE—West Coast—Ile de Ré—Mer du Fief	Establishment of Harbour Lights.
201	ENGLAND—East Coast—Yarmouth Sands—Hewett Channel	Decrease in Depth of Water.
202	THAMES RIVER ENTRANCE—Wollet and East Swin	Alteration in Buoyage.
203	UNITED STATES—Chesapeake Bay—Toos Point	Establishment of a Light.
204	MEDITERRANEAN—Italy—Tuscan Archipelago—Giannutri Island	Alteration in Light.
205	CHINA—East Coast—Hong Kong—Green Island	Establishment of a Light.
206	MALACCA STRAIT—Pulo Brasse	Intended establishment of a Light.
207	ENGLAND—South Coast—Spithead	Buoys marking Torpedo Ground.

NAUTICAL NOTICES.

193.—BALTIC.—*Gulf of Riga*.—*Dome-ness*.—A temporary lighthouse has been erected at the extremity of the Dome-ness reef, Gulf of Riga, from which a *fixed white* light is now exhibited. The two fixed white lights hitherto exhibited on Dome-ness have been discontinued, and the light-vessel which hitherto exhibited a revolving light off Dome-ness reef has been withdrawn. The temporary lighthouse is a square wooden building. Position, lat. 57° 48' 10" N., long. 22° 39' 15" E.

Note.—Vessels in passing Dome-ness reef should keep four cables from the temporary lighthouse.

194.—JAPAN.—*Goto Islands*.—*Fukuye*.—The following dangers are reported by Japanese fishermen to exist to the north-westward of Fukuye, viz. :—

Nichisone Rock, with 10 feet on it at low water, lies W. $\frac{1}{2}$ N. 5 $\frac{1}{2}$ miles from Hime-Sima. Approximate position, lat. 32° 48' 30" N., long. 128° 34' 30" E.

Côrasone Rock, with 6 feet on it at low water, lies N.W. by W. $\frac{1}{2}$ W.

2½ miles from Hime-Sima. Approximate position, lat. 82° 49' 50" N., long. 128° 38' 44" E.

Camisone Rock, with three feet on it at low water, lies N.N.W. 2½ miles from Hime-Sima. Approximate position, lat. 82° 50' 45" N., long. 128° 40' 10" E.

There is also said to be a dangerous rock at the north entrance of Fukuye channel, lying N.W. ¾ N. ¼ of a mile from the north-east point of Camono Chima islets. Approximate position, lat. 82° 49' 20" N., long. 128° 47' E.

195.—ENGLAND.—*South Coast.—Dungeness.*—With reference to Nautical Notices, Nos. 108 and 109 (April, 1875), on the intended exhibition of an additional light at Dungeness on or about the 1st July, 1875, notice has been given, that owing to unforeseen circumstances the light will not be exhibited until about the 1st October, 1875.

196.—ENGLAND.—*East Coast.—Dungeness.*—From the 1st October, 1875, the following alteration will be made in the fog-signal, now removed to the site of the additional light—viz., The blasts of the trumpet will be given at intervals of *one minute*, instead of twenty seconds as at present.

197.—IRELAND.—*South Coast.—Youghal.*—A sector of red light is now exhibited between the bearings of N.N.W. ¼ W. and N.W., from a window in a small building at the east side of the foot of the tower of Youghal light, from *two hours* before high water to *one and a half hours* after high water.

198.—ENGLAND.—*Medway River Entrance.*—A series of Torpedo experiments is about to be made at the entrance to the Medway river. A buoy is placed to mark the position on which the experiments will be made, on a line from Garrison point to a point 20 yards within shore of the *Cant edge* buoy, and at a distance of 1,000 yards from Garrison point.

199.—GIBRALTAR STRAIT.—*African Shore.—Blanca Point.*—Information has been received of the existence of a detached rocky patch lying 3 cables off Blanca point (8 miles north-westward of Cueta), and on which the steamship *Susan* was recently wrecked. This rock (*Susan rock*) is about 30 yards in extent north and south, and 10 yards east and west, has 16 feet water on it, and is steep-to, having 6 to 9 fathoms close around it. From the rock the following bearings were taken, viz.:—Point Leona, W. by N. ¾ N., 1½ miles; Blanca point tower (ruin), S. by W. ¼ W., 600 yards; North angle of old Cueta wall just open of Bermeja point, S. by E. ¾ E., ¼ mile. This danger lies E. by S. ¾ S., 8 cables from the known Benzus shoal, and there is from 7 to 8 fathoms between them.

200.—FRANCE.—*West Coast.—Ile de Ré.—Mer du Fief.*—Two leading lights are now exhibited on Pointe du Fief, west side of the entrance of the Mer du Fief (Fiers d'Ars), viz.:—

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198	ENGLAND—Medway River Entrance	Buoy marking Torpedo Ground.
199	GIBRALTAR STRAIT — African Shore — Blanca Point	Discovery of a Sunken Rock near.
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201	ENGLAND — East Coast — Yarmouth Sands — Hewett Channel	Decrease in Depth of Water.
202	THAMES RIVER ENTRANCE — Wallet and East Swin	Alteration in Buoyage.
203	UNITED STATES—Chesapeake Bay—Toos Point	Establishment of a Light.
204	MEDITERRANEAN — Italy — Tuscan Archipelago — Giannutri Island	Alteration in Light.
205	CHINA—East Coast—Hong Kong—Green Island	Establishment of a Light.
206	MALACCA STRAIT—Pulo Brasse	Intended establishment of a Light.
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NAUTICAL NOTICES.

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2½ miles from Hime-Sima. Approximate position, lat. 32° 49' 50" N., long. 128° 38' 44" E.

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200.—FRANCE.—*West Coast.—Ile de Ré.—Mer du Fief.*—Two leading lights are now exhibited on Pointe du Fief, west side of the entrance of the Mer du Fief (Fiers d'Ars), viz. :—

1. *Upper Light*.—A *fixed green* light, exhibited from a window of the keeper's dwelling, elevated 86 feet above high water.

2. *Lower Light*.—A *fixed white* light, exhibited from an iron post, bearing E. $\frac{3}{4}$ S., distant 870 yards from the upper light, and elevated 28 feet above high water.

Both lights should be seen 5 miles. Position of the upper light, lat. $46^{\circ} 14' N.$, long. $1^{\circ} 29' W.$ These lights in line, indicate the channel into the Mer du Fief.

201.—ENGLAND.—*East Coast*.—*Yarmouth Sands*.—*Hewett Channel*.—The north end of Hewett Channel has again decreased, and there is now only 21 feet water between South Scroby spit-buoy and St. Nicholas light-vessel.

202.—THAMES RIVER ENTRANCE.—*Wallet and East Swin*.—With reference to Nautical Notice, No. 145 (June, 1875), the following alterations have been made in the buoyage of the Wallet and East Swin.

Wallet Spitway Buoy has been moved E. by N. 2 cables, and is now surmounted by a *staff* and *St. Andrew's cross*, instead of a diamond as heretofore. The buoy is moored in 4 fathoms with—Brightlingsea church tower in line with a dark house on the beach, N. by W. $\frac{1}{4}$ W.; Clackton pier head in line with a gable of a red brick house, N.N.E. $\frac{1}{2}$ E.; Swin spitway buoy, South $1\frac{3}{10}$ miles.

North Eagle Buoy.—A new *can* buoy *chequered red and white* and named North Eagle has been placed near the northern elbow of the Eagle sand. The buoy is moored in 5 fathoms with—Brightlingsea church tower its width open west of a long red tiled barn, N. $\frac{1}{2}$ W.; North side of No. 6 Martello tower, touching south side of No. 5 tower, E.N.E.; Priory spit-buoy, E. by S. $\frac{1}{4}$ S., $1\frac{1}{2}$ miles; Bar buoy, W. $\frac{3}{4}$ N., 9 cables.

Whitaker buoy has been increased in size, and is now surmounted by a *staff* and *diamond*.

203.—UNITED STATES.—*Chesapeake Bay*.—*Toos Point*.—A *fixed white* light of the fifth order is now exhibited from a lighthouse at Toos point, south entrance point of York river. The light is elevated 40 feet above high water, and should be seen 11 miles. The lighthouse is built on iron screw piles, and painted brown. Approximate position, lat. $37^{\circ} 14' N.$, long. $76^{\circ} 23' W.$

204.—MEDITERRANEAN.—*Italy*.—*Tuscan Archipelago*.—*Giannutri Island*.—The light is now a *fixed white* light instead of a fixed red light as heretofore.

205.—CHINA.—*East Coast*.—*Hong Kong*.—*Green Island*.—A light of the fourth order is now exhibited from a lighthouse recently erected on Green island, north-west end of Hong Kong island. The light is a *fixed* light; *red* when bearing from S. by E. $\frac{1}{4}$ E., through East, to N. by E. $\frac{1}{4}$ E.; *green* between the bearings of N. by E. $\frac{1}{4}$ E. and N.W.; also *green*

between the bearings of S. by E. $\frac{1}{4}$ E. and S.S.W. $\frac{3}{4}$ W.; throughout the remaining 111° the light is obscured by the island itself. The light is 95 feet above the sea, and should be seen 14 miles.

206.—MALACCA STRAIT.—*Pulo Brasse*.—A revolving white light of the first order will shortly be exhibited from a lighthouse on the north point of Pulo Brasse, near the north-west end of Sumatra island. The tower is of stone, painted white. Position, lat. $5^\circ 44' 20''$ N., long. $95^\circ 9' 10''$ E. Further notice will be given of the date of the exhibition of the light.

207.—ENGLAND.—*South Coast*.—*Spithead*.—The following buoys have been placed in the vicinity of No-man's Land bank and off Gillkicker point, at Spithead, for the purpose of indicating the ground used for torpedo experiments. Four buoys painted green and white in horizontal bands to the south-eastward of No-man's Land fort:—

1. *North Buoy* in 15 fathoms. St. Jude Church over Southsea castle N. by E. $\frac{1}{4}$ E., and Kickergill tower over west end of fort Monckton N. by W. $\frac{3}{4}$ W.

2. *East Buoy* in $16\frac{1}{2}$ fathoms. Coastguard flagstaff at Eastney, open eastward of Horse fort N.E. easterly, and Kickergill tower just within the west end of fort Monckton N. by W. $\frac{3}{4}$ W.

3. *South Buoy*, a conical buoy in 5 fathoms. Coastguard flagstaff at Eastney well open eastward of Horse fort N.E. northerly, and Gillkicker fort open east of Horse fort N. by W. $\frac{1}{4}$ W.

4. *West Buoy* in 4 fathoms. Milton Church open east of Lumps fort N.E. $\frac{1}{4}$ N., and Gillkicker fort in line with No-man's land fort, N. by W. $\frac{1}{4}$ W.

These four buoys will be removed when the season for operations is over.

Three buoys, painted green and white in horizontal bands near Gillkicker point:—

1. *West Buoy*, in $11\frac{1}{2}$ fathoms. The Inner west beacon of the measured mile in line with the Coastguard flagstaff at Stokes bay N. by W., and the whole of Lumps fort in sight south of Southsea castle E. $\frac{1}{2}$ S.

2. *Middle Buoy*, a conical buoy in 8 fathoms. North side of Southsea Assembly rooms in line with the north angle of Pier hotel E.N.E., the flagstaff on the west end of fort Monckton in line with the inner east beacon of the measured mile N. $\frac{1}{4}$ W., and the west buoy W. by N. $\frac{1}{4}$ N.

3. *East Buoy*, in 8 fathoms. North corner of the old gun-wharf seen south of Blockhouse fort N.E. $\frac{1}{4}$ N., Lumps fort just showing to the southward of Southsea castle E. $\frac{3}{4}$ S., the middle buoy W.S.W., and the east end of the stone wall running from the east side of fort Monckton N. $\frac{3}{4}$ W.

These three buoys will be permanent. All these buoys are marked *Torpedo Ground*, in black and white letters.

Caution.—Mariners are recommended not to pass within the space marked by these buoys.

HYDROGRAPHIC NOTICE PUBLISHED BY THE ADMIRALTY.

No. 26.—Information relating to dangers in the Sulu sea, and on the north-east coast of Borneo. By Commander Buckle, R.N.

CHARTS, &c., Published by the Hydrographic Office, Admiralty, to the end of August, 1875, and sold by the Agent, J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.

No.	Scale.		s.	d.
628	m = { 1·3 } { 0·9 }	Africa, West Coast :—Opobo and Quaëbo rivers	1	0
1895	m = 0·68	Dungeness to the Thames, including Dover Strait	3	0
2191	m = 0·16	Gulf of Finland	2	6

(The following information has been communicated to us by various correspondents in different parts of the world.)

HONG-KONG.—The harbour master publishes the following notice in *Saturday's Gazette*:—"The chequered black and white buoy has been replaced to show the position of the Bokhara rock. The buoy is anchored in 7 fathoms of water about a boat's length inside or to the S.W. of the rock, which has 18 feet on it at low water springs. The buoy is placed with the east side of the rocky islet N.W. of Sun Kong, just touching the west side of Sun Kong; the islets off Cape D'Aguiar an apparent boat's length open of N.W. extreme of Beaufort Island; and Tathong Rock well open of Cape Collinson. Masters of vessels are cautioned to give the Bokhara buoy a berth of at least one and a-half cables' length to the eastward, as a foul patch with from $4\frac{1}{2}$ to 7 fathoms lies N.N.E. $\frac{1}{4}$ E. about 340 yards from the buoy. Tathong Rock shut in with Cape Collinson clears the patch."

KATTEGAT.—EAST COAST OF JUTLAND.—SPAR BUOYS OFF FREDERICKSHAVEN.—Information has been received, that two spar buoys have been placed off Frederickshaven, to mark the entrance—one on the southern edge of Marcus reef, and the other on the northern edge of the Borrebierg reef.

REMOVAL OF THE GIERILD FLAT ROCK, NORTH OF FORNESS.—Information has also been received that the Gierild Flat Rock, north of Forness, lying $7\frac{1}{2}$ feet below the surface of the water, has been blasted, but that there are still some parts left lying $12\frac{1}{2}$ and $13\frac{1}{2}$ feet below the water.

COAST OF BRAZIL.—**ST. CATHERINES, June 24.**—The Brazilian Minister of Marine, announces that a cylindrical buoy has been placed in 18 feet water on the Pontal Rock, 180 fathoms from the place of the wreck of the brig *Polo*, and having 25 feet of water in the intermediate channel.

LOFODEN ISLANDS.—**COAST OF NORWAY.**—Vest Vaagen, the northern bay of Vardo, is now commonly used as anchorage for vessels. Mooring buoys are placed for steamers and sailing vessels to make fast to. Although the bay is exposed to northerly and westerly winds, good shelter is afforded by the outlying islands, and during the summer months vessels discharge and take in cargo with safety. Pilots are to be had outside the harbour by showing the usual signals.

SWATOW.—The following bearings of two rocks not marked on the Admiralty Chart, at the entrance to Swatow, supplied by Messrs. Calder and Hocker, of the Chinese gunboat, *Chen-to*, have been published in the *China Mail*:—

Madras Rock has 5 feet water on it at Spring tides, it is not more than 6 feet in diameter on top and lies with—

North extreme Bottefurh's Rock,	...	...	...	N. 78.40 E.
Station at British Consulate,	...	...	...	S. 66.38 E.
Do. Bradley's Pier,	...	...	...	S. 19.00 E.
Do. Customs' Flag-mast,	...	...	...	N. 7.25 E.

Chen-to Rock has $4\frac{1}{2}$ to 5 feet of water on it at Spring tides, and is a cluster of three rocks, one of them being of a pinnacle shape and is not more than 5 feet in diameter on top.

The whole cluster does not occupy a space of more than 15 feet square; it lies with the following bearings:—

Station at British Consulate,	...	...	...	S. 18.20 W.
Do. Customs' Flag-mast	...	...	...	N. 16.00 W.
Do. Harbour Pilots' Pier...	...	...	...	S. 58.10 E.
Do. North extreme Bottefurh's Rock,	...	...	...	N. 74.10 W.

THE International Geographical Congress at Paris has accorded an *Honourable Mention* to Captain J. E. Davis, R.N., of the Hydrographical Department of the Admiralty, for his Improved Astronomical Sextant, and the valuable work of the Sun's True Bearing, or Azimuth Tables noticed by us last month. The award is all the more significant from the fact that only seven were allotted to the English.

OUR OFFICIAL LOG.

INSTRUCTIONS TO SURVEYORS.—A good book without a good index is sometimes useless. For a good book with a good index, we advise all Shipowners, Engine and Boiler Makers, Agents, Shipmasters and Underwriters, to obtain a copy of these Instructions. They can be obtained of Mr. J. D. Potter, Messrs. Imray, and of any Agent of the *Nautical Magazine*, or of any Chart Agent. A complete compilation of the instructions and regulations as to the fitting, construction, and equipment of ships has long been wanted, and is at last published.

BOARD OF TRADE CIRCULARS.

[Copies of these Circulars can be had of Messrs. Penttress and Co., and of Messrs. Potter, or through any of the Agents of the "*Nautical Magazine*," or the Agents for Admiralty Charts.]

LIFE-SAVING APPARATUS.—LIST OF STORES.—Officers in charge of the life-saving apparatus, being responsible for the efficiency of the gear, should be careful that the proper number of serviceable rockets and of all other stores is constantly kept up. For the information of officers so in charge, a list of the stores required for a complete apparatus (L.S.A. 24), and also a list of those required to be carried in the cart (L.S.A. 25), have been prepared. The list L.S.A. 24 should be pasted or hung up in the house, and the list L.S.A. 25 should be fitted on the outside of the tail board of the cart, or waggon.—T. H. Farrer, Secretary ; Thomas Gray, Assistant Secretary.—*M.* 15,026. 1874.—*Circular*, No. 7.

ALTERATIONS IN ROYAL NAVAL RESERVE REGULATIONS.—The Admiralty and the Board of Trade having determined on the subjoined alterations in the Royal Naval Reserve Regulations, the Registrars are requested to act in accordance therewith. The alterations are shown in italics.—T. H. Farrer, Secretary ; Thomas Gray, Assistant Secretary.—*M.* 6,962. 1875.—*Circular*, No. 19.

The undermentioned paragraphs will be read as under :—

Par. 10. If he cannot prove his services he must satisfy *the Inspecting Commander of Coastguard, the Commander of a Drill Ship, or the Divisional Officer* by a special examination that he possesses sufficient knowledge for the rating of A.B. or O.S., as the case may be. The result of this examination is to be reported by the Naval Officer on Form R V 85, and the Form is to be attached to the Application for Inrolment.

Par 82. (*Sub-section d.*) If the Medical Officer is satisfied, the Naval Officer will examine the applicant, and, if he is eligible, will sign the certificate of approval in the form of application, and will inform the applicant that he has been approved, subject to the verification of his application by the Registrar-General, and that if that verification

is satisfactory, a Certificate R V 2 will be forwarded to the Registrar at the Port named by the applicant, and that he should apply to that Registrar in the course of a few days; *in the meantime the man may proceed to drill (vide par. 87).*

119. Naval Reserve men will also, if they comply with the conditions of the Reserve, be entitled to the following retainers and clothing free :—

- (a.) Each Naval Reserve man belonging to the First Class will be entitled to a retainer of £6 per annum, and to a cap and ribbon, on enrolment.
- (b.) *A First Class Naval Reserve Man will on his first appearance for drill after each future re-enrolment be supplied free of charge with a suit of uniform clothing, consisting of 1 cap, 1 blue serge frock, 1 pair blue cloth trousers, 1 neckerchief, and 1 check shirt, which he will be required to wear during each period of 28 days' drill.*
- (c.) Each Naval Reserve man belonging to the Second Class will be entitled annually to a retainer of £2 10s., and a suit of uniform clothing free. The suit of clothing will consist of 1 cap, 1 blue serge frock, 1 pair blue cloth trousers, 1 neckerchief, 1 check shirt.
- (d.) *In the event of any article of clothing issued as above not being worn by a Naval Reserve man when on drill, or being shabby or worn out, the Naval Officer will supply him with new clothing in place thereof, and charge him with the cost.*
- (e.) *An entry of the issue of clothing should be made in the Certificate R V 2, in R V 15, and in Form R V 22, by the Naval Officer, as provided by par. 123.*

215. Whenever it appears by the Certificate R V 2 that the Reserve man's period of five years has expired, or is about to expire, the Registrar or Naval Officer will, especially if the man is a good man for Reserve, and has not permanently left the Sea Service, call his special attention to the importance of re-enrolment.

- (a.) *When a man desires to re-enrol for the third period of five years he will be accepted although he may intend to reside on shore, providing he has been actually serving at sea in the navigation of ships and his name appears in the ship's agreements for the whole of the first and second periods of five years.*

222. (Section b.) That he has belonged to the Second Class Reserve for a period of not less than two years, during which he has been constantly employed at sea, and that he has served for one year at least as able seaman, or if he can comply with the conditions qualifying for the First Class before the expiration of that period.

The Naval Officers will be careful that no men are recommended for advancement from the Second Class to the First Class who are not in all respects eligible.

TRANSFER OF VESSELS TO A FOREIGN FLAG.—With a view to prevent evasion of the provisions of the “Merchant Shipping Acts, 1871 and 1873,” with respect to unseaworthy vessels, arrangements have been concluded with the Governments of Belgium, Germany, Greece, and Portugal, by which British vessels about to be transferred to the flag of either of those countries may be surveyed by English Board of Trade surveyors. Surveyors are therefore instructed, upon an application to that effect being made to them by a Consul of any of the above-named countries, to survey any British vessel which it is proposed to transfer, and to forward their report of such survey direct to the Board of Trade, together with an account of all expenses incurred by them in the matter.—T. H. Farrer, Secretary; Thomas Gray, Assistant Secretary.—*M.* 6,292. 1875.—*Circular*, No. 20.

NUMBERING AND CLASSIFICATION OF CIRCULARS.—Circulars issued by the Marine Department of the Board of Trade will in future bear three numbers. The second subsidiary or class number will represent the position of the Circular in one or other of the following series, viz.:—*a*, Colonial; *b*, Consular; *c*, Examinations; *d*, General; *e*, Life-Saving Apparatus; *f*, Casualties; *g*, Royal Naval Reserve; *h*, Superintendence of Mercantile Marine; *i*, Surveys. Each officer will therefore be able to state whether he has a complete series of Circulars relating to the duties he discharges, and should apply at once for any that are missing. The Circulars named below have had their numbers, &c., altered, and any copies now on hand should be corrected. Surveyors, 299 to 1; Surveyors, 300 to 2; Surveyors, 301 to 3; Surveyors 302 to 4. Engagement and Discharge, 1; to Superintendents, 1; Emigration, 1; to Superintendents, 2.—T. H. Farrer, Secretary; Thomas Gray, Assistant Secretary.—*M.* 8,636. 1875.—*Circular*, No. 24.

ADMEASUREMENT OF TONNAGE.—**RIVER DANUBE.**—The surveyors are informed that special tonnage certificates, similar to those issued for the passage of the Suez Canal, will shortly be issued for steam vessels frequenting the River Danube, and that the instructions contained in Circular, No. 782, relative to the Suez Canal certificates, will apply equally to the certificates of the River Danube.—T. H. Farrer, Secretary; Thomas Gray, Assistant Secretary.—*M.* 8,659. 1875.—*Circular*, No. 25.

MEDICAL SCALE FOR PASSENGER SHIPS.—The annexed Scale of Medicines, Medical Stores, and Instruments for Ships clearing under the Passengers' Acts, other than Steamships engaged in the North Atlantic trade, has been issued and caused to be published by the Board of Trade, and is intended to supersede the Scales hitherto in force.—T. H. Farrer, Secretary; Thomas Gray, Assistant Secretary.—*M.* 8,097. 1875.—*Circular*, No. 8.

SCALE OF MEDICINES AND MEDICAL STORES.

For every 100 Passengers, when the length of the Passage, computed according to the Passengers' Act, is 100 days and upwards. Half the quantity of the Medicines indicated, but the same kind and quantity of Medical Stores should be taken when the Passage is less than 100 days.

N.B.—There is a separate Scale for North Atlantic Steam Passenger Ships.

Directions for Druggists.		Lbs.	Oz.	Dr.
The medicines to be prepared according to the British Pharmacopœia, to be plainly labelled in English, and the average doses for an adult stated, according to the British Pharmacopœia. All bottles to be stoppered, and all medicines indicated thus (*) to be marked with a red poison label. All fluid quantities to be measured by <i>fluid</i> lbs., ozs., or drs.				
B.P. - - - - -	* Acid : Acetic - -	0	6	0
A powder containing not less than 20 per cent. of pure Carbolic or Cresylic Acid.	* „ Carbolic - -	0	1	0
	* } „ do. - - -	112	0	0
	„ Citric - - -	0	3	0
	„ Gallic - - -	0	1	0
	* „ Hydrocyanic Dil. -	0	0	4
	* „ Nitric - - -	0	1	0
	* „ Sulph. Dil. - -	0	6	0
	Æther - - -	0	1	0
	Alumen - - -	0	1	0
	Ammon. Carb. - -	0	6	0
	Amylum - - -	1	0	0
Stick - - - - -	Argent. Nit. - -	0	0	2
	Calx. Chlorata - -	7	0	0
	Camphor - - -	0	6	0
	Charta Epispastica -	4 square feet in case.		
	*Chloride of Zinc (Barnett's Solution of) -	16	0	0
	*Chloroform - - -	0	8	0

Directions for Druggists.		Lbs.	Oz.	Dr.
	Copaiba - - -	0	8	0
	Creasote - - -	0	0	2
	Cupri Sulph. - - -	0	1	0
	Empl. Cantharidis - -	0	1	0
	Ferri et Quiniæ Citr. -	0	1	0
	„ Sulph. - - -	0	0	4
	Glycerine - - -	0	6	0
	„ Acid. Tannic. - -	0	4	0
	*Hydrat. Chloral - -	0	1	6
	Hydrarg. cum Creta - -	0	0	4
	„ Subchlorid. - -	0	0	4
	Lini Farina - - -	6	0	0
	Lin. Camph. - - -	0	8	0
	* „ Opii - - -	0	2	0
	„ Saponis - - -	1	0	0
	*Liq. Atropiæ - - -	0	0	1
	„ Calcis - - -	1	0	0
	* „ Morphiæ Acetatis -	0	1	0
	* „ Plumbi Subacetatis -	0	2	0
	„ Potassæ - - -	0	2	0
B.P. or Condyl's Fluid (Crimson).	* „ „ Permanganatis -	3	0	0
Omit Extract of Liquorice and substitute Aromatic Spirit of Ammonia, 1 oz. to 1 pint of the mixture.	Magnes. Sulph. - - -	4	0	0
	Mist. Sennæ Co. - - -	3	0	0
	Ol. Croton - - -	0	0	1
	„ Lini - - -	0	8	0
	„ Ment. Pip. - - -	0	0	2
	„ Morrhue - - -	3	0	0
	„ Olivæ - - -	1	0	0
	„ Ricini - - -	2	0	0
	„ Terebinth. - - -	1	0	0
All pills to be made and marked 5 grains.	*Opium - - -	0	0	1
	Pil. Aloes cum Myrrhâ -	2	dozen.	
	„ Col. c̄ Hyosc. - -	4	„	
	„ Hydrarg. - - -	3	„	
	„ Ipecac. c̄. Scillâ -	5	„	
	„ Quiniæ - - -	6	„	
	„ Sapon. Co. - - -	6	„	
	*Plumbi Acetatis - -	0	1	0
	Potassæ Bicarb. Pulv. -	0	4	0
	Potassii Iodid. - -	0	2	0
	Pulv. Antimonialis -	0	0	3
Double the quantity indicated to be taken to all tropical ports :	} „ Astringens - -	1	0	0
Pulv. Catechu Co. } equal }				
„ Cret. Arom. } parts }				
„ c̄ Opio -				

Directions for Druggists.	—	Lbs.	Oz.	Dr.
Double the quantity indicated to be taken to all tropical ports. - - }	Pulv. Cretæ Arom. cum			
	Opio - -	0	2	0
	„ Ipecac - -	0	2	0
	„ „ Co. - -	0	2	0
	„ Jalapæ Co. - -	0	3	0
	„ Potassæ Nitratis - -	0	4	0
	„ Rhei Co. - -	0	4	0
	„ Scammon. Co. - -	0	0	6
	Quiniæ Sulph. - -	0	1	0
	Sodæ Bicarb. - -	1	0	0
A neutral solution containing 4 grains in a dram, and so marked. To be labelled—For hypodermic injection. - - }	Sp. Æther. Nitrosi - -	0	8	0
	„ Ammon. Arom. - -	0	8	0
	„ Rectif. - -	0	4	0
	Sulphur. Sublimatum - -	8	0	0
	Syr. Ferri Iodid. - -	0	4	0
	*Sol. Morph. Acetat. - -	0	0	4
	Tr. Arnicæ - -	0	6	0
	„ Camph. Co. - -	0	8	0
	* „ Digitalis - -	0	0	8
	„ Ergotæ - -	0	6	0
	„ Ferri Perchloridi - -	0	4	0
	* „ Opii - -	0	6	0
	„ Scillæ - -	0	2	0
	„ Valerian. Ammon. - -	0	3	0
	Ung. Cetacei - -	1	0	0
	„ Hydrarg - -	0	2	0
	„ „ Ox. Rub. - -	0	1	0
	„ Sulphur. - -	1	0	0
	„ Zinci - -	0	2	0
	Vinum Colchici - -	0	1	0
	„ Ipecac. - -	0	1	0
	Zinci Sulphat. - -	0	1	0
	Desiccated Soup - -	4	0	0

MEDICAL STORES.

Lint, 10 ozs.; Tow, 1 lb.; Adhesive Plaster, 3 yds.; Male Syringe, 1; Male Syringe Glass, 1; Female Syringe, 1; Female Syringe Glass, 1; Phials (assorted), 2 doz.; Phial Corks, 6 doz.; Sponges, 3; Bed

Pan, 1; Paper of Pins, 1; Hernia Truss, 36-inch reversible, 1; Paper of Pill Boxes, 1; Gallipots, 6; Leg and arm bandages, 6; Calico, 3 yards; Flannel Bandages, 7 yards long, 6 inches wide, 2; Flannel, 2 yards; Triangular Bandages, base 48 inches, sides 33 inches each, 2; *Minim Measures, 2; *1 oz. Measures, 1; *2 oz. Measures, 1; *Set of Splints, 1; *Waterproof Sheeting, 4 yards; *Oiled Silk, 1 yard; *Enema Syringe and Stomach Pump, 1; *Box of Small Scales and Weights, 1; *Wedgwood Mortar and Pestle 1; *Wedgwood Funnel, 1; *Spatulas, 2; *Authorized Book of Directions for Medicine Chests, 1; *British Pharmacopœia, 1.

INSTRUMENTS.

1 Tenaculum, 1 Artery Forceps, 1 Operating Forceps, 1 Finger Knife, 1 Curve Bistoury Probe Point, 1 Curve Bistoury Spear Point, 2 Probes, 1 Silver Director, 1 Caustic Case, 1 Scissors, 1 Spatula, 12 needles, 1 Skein Ligature Silk, 3 Lancets—the above in Pocket Case; 1 Amputating Saw, 2 Amputating Knives, 1 Bone Forceps, 3 Tooth Forceps, 1 Skull Forceps, 1 Trephine, 1 Elevator, 1 Hey's Saw, 1 Trephine Brush, 2 Scalpels, 1 Hernia Knife, 2 Trocaers and Canulas, 1 Aneurism Needle, 1 Hernia Director, 1 Tourniquet, 2 Silver Catheters (Nos. 4 and 8), 4 Elastic Gum Catheters (Nos. 3, 5, and 7), 1 Clinical Thermometer, 1 Hypodermic Syringe, 1 dozen charged Tubes for Vaccination, 1 Set of Midwifery instruments.

N.B.—Only one set of instruments required, without regard to the number of surgeons, passengers, or the length of the voyage.

ENAMELLED PLATES.—LIFE-SAVING APPARATUS.—Instructions in the use of the Rocket Apparatus for saving life from stranded ships have been prepared on enamelled plates for the purpose of being put on board vessels in such places and in such a manner as to be constantly under the notice of officers, crew, and passengers. When application is made for these plates by owners or masters the surveyor is to see that one of them is fastened up in or near the master's or other officer's cabin or berth, and in the case of large ships that one is also fastened up where it may be most likely to answer the purpose for which it is designed—viz., the imparting of information to the petty officers and crew. Superintendents of Mercantile Marine Offices will supply the plates upon application by owners or masters free of charge, provided the owners or masters undertake to have them placed on board to the satisfaction of the surveyors.—T. H. Farrer, Secretary; Thomas Gray, Assistant Secretary.—*M.* 8,449. 1875.—*Circular*, No. 22.

* One set only of these articles required, irrespective of number of passengers.

MEDICAL STORES.

Directions to Druggists.		1 For 100 Passen- gers.	2 For 200 Passen- gers.	3 For 300 Passen- gers.	4 For 400 Passen- gers.	5 For 500 Passen- gers.	6 For 600 and up- wards.
	Lint	6 oza.	8 oza.	10 oza.	12 oza.	14 oza.	16 oza.
	Adhesive plaster ...	2 yds.	3 yds.	4 yds.	6 yds.	6 yds.	7 yds.
	Sponges	2	2	2	2	2	2
	Bed pan	1	1	1	1	1	1
5 yds. long, 3 in. wide	Leg and arm bandages	6	6	6	6	6	6
7 " 6 "	Flannel do.	2	2	2	2	2	2
1 case " 48 in., sides	Triangular do.	2	2	2	2	2	2
33 in. each.	Flannel	2 yds.	2 yds.	2 yds.	2 yds.	2 yds.	2 yds.
	Minim. measures ...	2	2	2	2	2	2
	Ounce "	1	1	1	1	1	1
	2 ounce "	1	1	1	1	1	1
	Enema syringe and stomach pump.	1	1	1	1	1	1
	Box of small scales and weights.	1	1	1	1	1	1
	Wedgwood mortar and pestle.	1	1	1	1	1	1
	Wedgwood funnel ...	1	1	1	1	1	1
	Spatulas	2	2	2	2	2	2
	Set of splints	1	1	1	1	1	1
	Authorised Book of Directions for Medi- cine Chest.	1	1	1	1	1	1
	British Pharmacopoeia.	1	1	1	1	1	1

INSTRUMENTS.

1 Scalpel, 1 Tenaculum, 1 Artery Forceps, 1 Operating Forceps, 1 Finger Knife, 1 Curve Bistoury Probe Point, 1 Curve Bistoury Spear Point, 3 Lancets, 1 Spatula, 1 Scissors, 1 Silver Director, 2 Probes, 1 Caustic Case, 12 Needles, 1 Skein Ligature Silk—the above in Pocket Case; 1 Amputating Saw, 2 Amputating Knives, 1 Hernia Knife, 1 Hernia Director, 2 Trocars and Canulas, 1 Aneurism Needle, 1 Tourniquet, 1 Bone Forceps, 3 Tooth Forceps, 1 Skull Forceps, 1 Trephine, 1 Elevator, 1 Trephine Brush, 1 Hey's Saw, 2 Silver Catheters (Nos. 4 and 8), 4 Elastic Gum Catheters (Nos. 3, 5, 6, and 7), 1 Clinical Thermometer, 1 Hypodermic Syringe, 1 dozen Charged Tubes for Vaccination, 1 Set of Midwifery Instruments.

WATER DISTILLING APPARATUS FOR PASSENGER SHIPS.—The regulations hitherto in force with reference to the description of distilling apparatus to be carried in passenger ships have been revoked by Order in Council of the 28th June, 1875, a copy of which is hereto annexed. In future such machines only can be taken as the Board of Trade may from time to time approve. The following course will be observed with regard to all descriptions of distilling apparatus which have not already received the Board's approval:—1. Every such Machine before it can be passed by the Board's surveyors must have made, at least, one voyage in a passenger ship, and this at the maker's expense. 2. It must not

have been taken to pieces during the voyage, and until the surveyors can examine it must remain exactly in the same as it presented when the voyage was concluded. 3. A record must have been kept conjointly by the master, the man in charge of the apparatus, and the surgeon of the ship, if there is one, of the time during which the machine was kept working, and of the quantity and quality of the water produced. 4. A complete set of drawings of all the apparatus, including condenser engines and boilers, &c., with sizes, &c., must be submitted for approval, and the pressure at which the engine and boilers are to be worked must be stated. The steam for working the apparatus is not to be taken from the main boiler, and no exhaust steam must be permitted to go into the condenser. A filter of suitable size, and filled with animal charcoal, must be fitted to the machine for the passengers' use, and so placed that it can be cleaned without removing any other portion of the apparatus.—T. H. Farrer, Secretary; Thomas Gray, Assistant Secretary.—*M.* 7,715. 1875.—*Circular*, No. 29.

DEATHS ON BOARD SHIPS.—The attention of the Officer is drawn to cases of death on board ship. Paragraph 9 of his instructions states his general powers of inquiry into infringements of the Merchant Shipping Acts, and paragraph 50 requires him to inquire into the death of any seaman or apprentice on board British foreign-going ships. The Officer should be careful not only to carry into effect the provisions of these paragraphs, and also to report suspicious cases of deaths, but in every case of death (with or without suspicion) to state, by an indorsement on list of the crew, the circumstances under which the death took place.—T. H. Farrer, Secretary; Thomas Gray, Assistant Secretary.—*M.* 2,297. 1875.—*Circular*, No. 18.

ENAMELLED PLATES.—LIFE-SAVING APPARATUS.—With reference to Circular 794, the Surveyor should see that the nails used to fix the enamelled plates, "Instructions in use of Rocket Apparatus," are made of zinc to prevent corrosion.—T. H. Farrer, Secretary; Thomas Gray, Assistant Secretary.—*M.* 9,580. 1875.—*Circular*, No. 27.

INSTRUCTIONS TO MEASURING SURVEYORS.—The judgment in the case of the *Bear* and Mr. Mumford's report are inclosed for the guidance of measuring surveyors. In cases similar to the *Bear* the space in question must of course, in future, be excluded from measurement. It is also to be understood from this judgment that where a space is so far from being entirely and permanently closed in that it is not fit for, and is not intended to be used for, cargo (other than cargo which can be carried on an open deck), is not to be included in the measurement. The decision does not appear to apply to cases where the space in question is capable of being used for, or is intended to be used for, cargo not ordinarily carried on an open deck. The difficulty will be to distinguish between

these two cases, and the evil to be guarded against is, that ships may be specially constructed and loaded so that they will get the benefit of the exemption, and yet be practically able, by closing up the space or otherwise, to carry in the exempted spaces cargo which they would not carry on an open deck. It will be observed that Mr. Mumford reports that the upper deck of the *Bear* "*is not practically a complete deck for all purposes of safety to ship and cargo ;*" and it will further be observed that one of the tests used by the judges is, that "*to load cargo in the exempted space might render the ship unseaworthy.*" It seems, therefore, that a certain space is to be exempted from measurement (and consequently from taxation) on the grounds (1) that the deck above it is not practically a complete deck for all purposes of safety ; and (2) that to load cargo in the space under that incomplete deck might render the ship unseaworthy. If this exemption should lead to the construction of imperfect and weak decks and coverings, or to the stowing of cargo where it is unsafe to carry it, the effect of the tonnage law will be to increase the risk to life and property at sea. Under these circumstances, measuring surveyors are instructed to be cautious : and in every case in which there is any room for doubt, to report the case fully to the principal surveyor of tonnage, who will refer it with his observations to the Board of Trade for their instructions.—T. H. Farrer, Secretary ; Thomas Gray, Assistant Secretary.—*M.* 5,571. 1875.—*Circular*, No. 24.

GRAIN LADEN SHIPS.—CORRESPONDENCE BETWEEN THE BOARD OF TRADE AND THE COMMITTEE OF LLOYD'S.

"(M. 11022).—Board of Trade, Whitehall Gardens, 30th July, 1875. —To the Secretary, Lloyd's, E.C.—Sir,—Referring to previous correspondence on the subject of grain cargoes, and to the interview between Mr. Wylie and the President of this Board, I am directed by the Board of Trade to request the attention of the Committee to the enclosed clause which stands on the notice papers as an amendment to the Merchant Shipping Bill now before Parliament. The Board of Trade would be glad to learn the opinion of the Committee on this clause, and especially whether without unnecessarily injuring the trade in corn it will effect the objects which the Committee have in view. The Board of Trade would also be glad to know whether it is, in the opinion of the Committee, practicable to make and enforce in this country regulations which will insure the safety of ships loading grain abroad during the ensuing winter. The Board would be glad to have an answer by to-morrow morning, if possible.—I have, &c., T. H. FARRER."

"Mr. Reed to move the following clause—(*Cargo of grain, &c.*):—No cargo consisting wholly or partly of any kind of grain, corn, rice,

paddy, pulse, seeds, nuts, or nut kernels, shall be carried on board any British ship, unless the same shall be contained in bags, sacks, or barrels, or thoroughly secured from shifting by boards, bulkheads, or otherwise. A British ship carrying cargo which consists wholly or partly of any such goods shipped in bulk shall not be deemed seaworthy. The master of any British ship who shall knowingly allow any cargo or part of a cargo to be shipped therein for carriage contrary to the provisions of this section shall, for every such offence, incur a penalty not exceeding two hundred pounds."

"Lloyd's, 80th July, 1875.—To H. Farrer, Esq., Secretary, Board of Trade.—Sir,—In reply to your letter of this date, I am directed to say that the Committee of Lloyd's meeting only on Wednesday in each week I am not able to give you their opinion upon the question you propose quite officially, but I believe I may say that the opinion of my Committee is, that *no legislation on this side only will be of any effective service in stopping shipments of cargoes of grain in bulk*, but that action to be of any power must be taken at the *loading port*. They believe that only in this manner an effective control over all shipments of grain cargoes can be fairly and generally enforced, and that any other legislation must affect only British shipping injuriously while the laws of the country of export would deal equally with ships of all nations. They believe, too, that fines and dicta of unseaworthiness (which in reality may or may not exist) can either be evaded or would be so arbitrarily carried out that they would be intolerable. I would venture to point out that unseaworthiness is a question of fact and legal proof, and that no Act of Parliament can make a ship unseaworthy if she is not so, or should be *held* to make her so if she be not proved so in reality, nor is it to be supposed that it will prevent underwriters from paying for the loss of a ship if they have covenanted to do so. As to the special clauses brought under the notice of my Committee they appear so unreasonable that they scarcely need comment. It has never been a question of interfering with the cargo *partly loaded* with grain, because the great causes of danger do not in that case exist. I should have preferred not to go further into the special clauses marked for the opinion of the Committee, but upon the same authority with which I have already written I may perhaps say that my Committee believe that a hard and fast line of loading has been shown to be impracticable, and that compulsory classification of all ships in all trades is an arbitrary rule which ought not to be insisted upon. Some of the finest ships in the Merchant Service have never borne a classification.—I have, &c., J. F. OLLARD, Asst. Sec., pro Sec."

GENERAL.

LIVES LOST AT SEA.—The following is a copy of a letter to the Editor of the *Times* :—

“ Sir,—Will you allow me to say a few words as to the passage in your leader of to-day, in which you say that ‘ five thousand *seamen* go to the bottom every year ? ’ Mr. Plimsoll puts the number as 6,927.

“ The average number of *all* persons drowned at sea, taking the returns for five years ended December, 1872, is 2,425, and that number includes *passengers* as well as crews lost or missing from British ships all over the world. The number of all lives lost by casualties to British ships during the year ended June, 1874, is 4,416, including passengers and including missing crews. It is thus 1,991 above the annual average. Of this excess of 1,991 lives lost in the year, I may mention that 821 and 420 respectively were lost in Coolie ships abroad. Those two losses alone account for 1,241 of the 1,991 lives.

“ As regards the loss of 2,881 lives in 150 missing ships, I should like to point out that the 150 ships and the 2,881 missing men are included in the 4,416, and also that 69 of those 150 missing ships were known to have been classed ships ; the remainder were not known to be classed, but many of them might have been.

“ It is a fact, that with the 150 missing ships there are also 2,381 missing men. Of these, 1,462 are missing in classed ships, and 919 in the others. The whole number of seamen’s lives lost is 2,958, not 6,927.

“ I make no remark on the causes of this deplorable loss of life, or as to the remedy that may be needed ; but I trust you will allow me to publish through your columns a correct statement of the numbers.

“ Yours faithfully,

“ THOMAS GRAY.

“ Board of Trade, S.W., July 27.”

NEWLY DISCOVERED PROPERTY OF LIGHT.

SOME new discoveries relating to light, and the most important since the day when the possibility of spectrum analysis was first made known, have been made by Mr. William Crookes. They have excited a considerable amount of interest at recent meetings of the Royal Society. The first discoveries by Mr. Crookes were made known to the Royal Society in August, 1873 ; but his more recent discoveries, which are still more remarkable, were first described there about two months since.

Mr. William Crookes had previously made known that a lever arm of pith, delicately suspended in a very perfect vacuum, was repelled by the

impact of light or radiant heat. A great condition of success in the experiments was to work with the highest possible rarefaction ; consequently the lever arms were suspended in glass bulbs from which the air had been exhausted by means of the Sprengel pumps, which gives a far more perfect vacuum than can be obtained by the use of any other apparatus.

The circumstance that light could not turn a lever arm so suspended has been quoted in standard scientific text-books, by Dr. Balfour Stewart and others, as one point in the long chain of evidence against the truth of Newton's emission theory of light. But Mr. Crookes has now exhibited a bar of pith suspended by a cocoon fibre in a large glass bulb, very well exhausted. When a lighted candle was placed about 2in. from this bulb, the pith bar began to swing to and fro, the swing gradually increasing in amplitude until the dead centre was passed over, when several complete revolutions were made. The torsion of the suspended fibre then offered resistance to the revolutions, after which the bar began to turn in the opposite direction, and so on alternately. These movements were kept up with energy and regularity, so long as the candle continued to burn. When, instead of a candle, a piece of ice was placed near the bulb, one end of the lever arm came towards it as if attracted ; but the truth was, as explained by Mr. Crookes, that radiant heat was acting upon the pith bar from all parts of the room, and that the presentation of the piece of ice lowered the radiation on one side ; consequently, the movement was really caused by repulsion acting in the opposite direction.

Professor Osborne Reynolds suggested that the movement might be due to evaporation and condensation, at the surface of the suspended body. Mr. Crookes had a thick and strong bulb blown at the end of a piece of difficultly fusible green glass, specially made for boiler gauges. In it, he supported a thin bar of aluminum at the end of a long platinum wire, the upper end of which wire was passed through the top of the tube, and well sealed for electrical purposes. The apparatus was sealed by fusion to the Sprengel pump, and the exhaustion was kept going on for two days, until an induction spark refused to pass across the vacuum. During this time, the bulb and its contents were several times raised to a dull red heat. At the end of the two days' exhaustion, the aluminum bar was found to behave in the same manner as, but in a stronger degree than it would in a less perfectly exhausted apparatus—namely, it was repelled by heat of low intensity and attracted by cold.

The most remarkable of all the facts made known by Mr. Crookes, is an apparent difference between the action of radiant light and radiant heat. At the highest exhaustion, dark heat appeared to act almost equally on white pith and on pith coated with lamp-black, repelling either

with about the same force; but, strange to say, the luminous rays repelled the black surface with more energy than the white one. Mr. Crookes has also constructed an instrument which he calls a "radiometer," and which excited much attention and interest, both at the *soirée* of the Royal Society and the meeting last week. The apparatus consists of four arms, suspended on a steel point resting on a cap, so that the arms are able to revolve horizontally upon their central pivot, just the same, in fact, as the arms of an anemometer revolve. To the extremity of each arm of straw in the apparatus made by Mr. Crookes, is fastened a thin disc of pith, white on one side and black on the other, the black surfaces of all the discs facing the same way; the pith discs are each about the size of a sixpence. The whole arrangement is enclosed in a glass globe, which is then exhausted to the highest attainable point and hermetically sealed.

This arrangement rotates with more or less velocity under the action of light. With one of the instruments, the arm revolved once in 182 seconds, when a candle flame was placed at a distance of 20in. When the same candle was placed at a distance of 10in., one revolution in 45 seconds was the result; and at 5in., one revolution was given in 11 seconds. Thus, it will be seen, that the mechanical effect varies almost exactly inversely with the square of the distance, so that theory and experiment coincide.

In these experiments, Mr. Crookes had to be very careful to guard against the effects of undesired radiation. The lighted sun burners in the roof of the hall of the Royal Society, interfered with some of the results, and a candle placed incautiously near his bulbs, would send the contents of some of them spinning. As the velocity with which they spin varies with the intensity of the light, in these instruments we have a new form of actinometer. The action of the radiometer has not yet been explained.



"AURORA." (Silent.)



"AURORA." (About to Blow.)



"THE VICAR OF BRAY." (In Repose.)



"THE VICAR OF BRAY." (About to Blow.)

THE NAUTICAL MAGAZINE.

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THE OWNER'S LOAD-LINE.

IN our number for May last we reviewed, at some length, the whole question of load-line legislation and advocated the incorporation of an "owner's load-line" with the Government Bill. Everyone knows the history of that Bill, and also of the short and temporary Act which has, since then, been put in its place. As is indicated by the title of this article, we are not now going into the whole question of the recent legislation, but we congratulate our readers and all who have at heart the true interests of the Mercantile Marine, on the highly satisfactory circumstance that although the new Act was passed under great excitement, it is not itself a piece of sensational legislation. It is merely a development of the old policy of the Board of Trade, an application of the principle that it is not the province of Government either to direct or to certify, but it devolves upon Government to inspect, and where necessary to correct or to condemn; they should interfere to prevent or to punish wrong doing, but they should take no portion of the responsibility away from the shipowner whose business it is to make and to keep his ship seaworthy. The "owner's load-line" clause is in no wise a concession to the advocates of the paternal policy, nor does it wish Government to prescribe for the shipowner how his ship shall be loaded.

The proposal that the owners of ships should themselves be compelled to fix the limit of immersion of their ships, originated with the officers of the Board of Trade. Although there is no doubt that this question was fully discussed within the mystic circle, we believe it was first

formally brought before the public on the occasion of a discussion on the freeboard question at the Institution of Naval Architects in 1872, by Mr. J. McFarlane Gray. The plan was again brought forward by him at the meeting of the Institution in 1874. His plan, however, also contained a provision for increasing the tonnage upon which dues are paid or diminishing it, according as the marked load-line is above or below the immersion contemplated when the Tonnage Act was framed.

Our readers will remember that in the early part of the present session Mr. Norwood brought in a Bill, entitled the " Merchant Shipping (Load-Line) Bill," of which the proposal for an owner's load-line was the chief feature. The clause in the new Government measure which has passed into law is substantially the same as that of Mr. Norwood. The load-line is to be marked by a ball of sufficient size to be visible, having a horizontal line drawn through its centre, the line indicating the intended load-line in salt water. It is also provided in addition to Mr. Norwood's clause, that lines shall be marked outside every ship, showing the position of her decks, that any one may see how much freeboard she has from the various decks. We think the Board of Trade advisers have raised a very serious question in requiring the marking of the decks to the *upper* sides amidships, because if an owner puts thick balks of timber there, he will get an advantage over another who has a stronger but thin iron deck.

It is made clear by the Act that the Board of Trade do not certify the load-line in any case; a record of it is to be delivered by the owner to the Customs, but it is not to be officially recorded by the Board of Trade. Any action by the Board of Trade, whereby they should be a party in any way to fixing a load-line, would be to ignore the intention of the Legislature. Government does not intend to prescribe the load-line; the mark is to be declaratory of the *owner's* intention, and of the intention of no one else. It is to give the same information which would be conveyed by the ship's immersion when completely loaded. Its effect will be that a ship can be dealt with legally as regards overloading from the period when its mark is put on, instead of, as heretofore, at the last minute, just as it is about to put to sea. It was said that when no ship could be stopped without communicating with Whitehall, so much time was often lost, that an overladen ship escaped while telegrams were passing about her. This state of things will be altered by the new arrangement, and in addition the marked load-line virtually indefinitely extends the time between loading and sailing, and the effect must be to make assurance doubly sure. Another effect it may have, perhaps not altogether so beneficial as has been supposed. It is said, and with much truth, that shipowners will not *mark* their vessels for so deep a line as they would venture to load

them to, if unmarked. The ship's loading will be brought prominently before the public ; any one can see, and any one can bring into question, the owner's load-line. We think the advantage connected with this will be that the loading of a ship will be according to the owner's deliberate judgment, not according to the exigencies of circumstances just before she starts. To the pressure put upon him by some good customer, the shipowner need not now yield against his better judgment : his line is marked, he can go no further, however urgent the business. There will be no more cases now of an extra fifty or hundred tons being, at the last moment, put into a vessel already fully laden in order to prevent great loss to the merchant. On the other hand we may expect that since appearance is to go for so much, some shipowners will be induced to get vessels built for them which shall always *appear* to have good freeboard, while, considering their strength, they are too deeply laden. By no marking of vessels can the public at large be made to understand whether they are overladen. There are elements in the question which can only be, and will only be, understood by those who have a thorough acquaintance with the whole subject. If a marked load-line shall lead to a demand for such vessels as would only obtain the lowest class in the registries, it will be a misfortune rather than a benefit. Again, there is the case of the large number of iron ships which have water ballast. Many of these vessels are often so loaded, that they require ballast to insure their stability. If it be imperative that under all circumstances the load-line mark must show, will there not often be a temptation to diminish the stability which cannot be seen, to increase the freeboard which can be seen ? It is in the power of the Board of Trade to prevent this or any other action on the part of the owner tending to make his ship unseaworthy.

It is, indeed, a distinguishing feature of the legislation of the last few years that it takes in all causes of unseaworthiness. Let a ship be, for any reason whatever, unseaworthy, the Board of Trade have power to stop her from going to sea. On the rival plan of inspecting and certifying all ships, only special forms of danger can be provided for by special legislation. Thus, if Government had in its hands the classification and loading of ships, it would soon be found also necessary to inspect and certify the stowage, and this would again lead to further interference, so that at last it might perhaps come to be considered the shortest and best method of settling the whole question for a paternal Government to take the entire carrying trade of the country into its own hands, when the Marine Department of the Board of Trade would, of course, become merely a sub-department under the Postmaster-General, and perhaps all our present difficulties about merchant ships and seamen might disappear with the ships and seamen themselves.

INTERNATIONAL AND MUNICIPAL LAW.—THE “SCHILLER.”

WHEN the loss of the *Schiller* was about to form the subject of an official inquiry, a question of much interest and importance was raised—namely, whether, in such a case, the *Schiller*, being a foreign ship, and her master and crew foreign subjects, the British Executive had any jurisdiction. As a similar case may at any time arise, and as there has been, more particularly amongst those concerned for foreign shipping in this country, considerable misconception on the point, it may be as well to see how it stands, having regard to the principles alike of international and municipal law. Three sufficiently distinct principles may be deduced from the conclusions of the jurists on this question of jurisdiction:—1, that public armed ships in the service of a foreign sovereign, with whom a country is at peace, enter the ports of that country under the understanding that while demeaning themselves in a friendly manner they are exempt from the local jurisdiction; 2, that foreign private vessels entering foreign ports are subject to the local jurisdiction; 3, that both public and private vessels of every nation on the high seas, and out of the territorial limits of any other State, are subject to the jurisdiction of the State to which they belong; merchant vessels, in this view of international law, are regarded, so to speak, as private persons. “When private individuals,” says Wheaton (*Elements of International Law*, 6th Ed., p. 151), “of one nation spread themselves through another, as business or caprice may direct, mingling indiscriminately with the inhabitants of that other; or when merchant vessels enter for the purposes of trade, it would be obviously inconvenient and dangerous to society, and would subject the laws to continual infraction, and the Government to degradation, if such individuals did not owe temporary and local allegiance, and were not amenable to the jurisdiction of the country.” “But the situation of a public armed ship,” he adds, “is in all respects different. She constitutes a part of the military force of her nation; acts under the immediate and direct command of the sovereign; is employed by him in national objects. He has many and powerful motives for preventing those objects from being defeated by the interference of a foreign State. Such interference cannot take place without seriously affecting his power and his dignity. The implied license, therefore, under which such vessels enter a friendly port may reasonably be construed, and ought to be construed, as continuing an exemption from the jurisdiction of the sovereign within whose territory she claims the rights of hospitality.” As regards the jurisdiction which a nation exercises over its public and private vessels on the high seas, it must be borne in mind that such

jurisdiction is exclusive only so far as respects offences against its municipal laws. Piracy and such like offences against the law of nations being, in the language of the jurists, "crimes not against any particular State, but against all mankind," are cognizable by the tribunals of any country where the offender or offenders may be found, or into which he or they may be brought, though committed on board a foreign ship and on the high seas. These principles, although now universally recognised, are applied in each country in its own way according to the legal method of each, and, of course, with greater or less exactness according to the mode in which the local laws are administered. Thus, in France, the local tribunals decline jurisdiction with respect to Acts of mere interior discipline on board foreign merchant vessels, or even as to crimes and offences committed by officers and crews against each other—provided the peace of the port is not thereby disturbed—but as to crimes and offences committed on board the foreign ship against persons not belonging to the vessel, or by any other than a person so belonging, the French tribunals assert a jurisdiction, and the principle on which the French law proceeds in making this distinction is thus explained:—The French law declares that the rights of the power to which the vessel belongs should be respected, and that the local authority should not interfere unless its aid is demanded. These acts, therefore, remain under the police and jurisdiction of the State to which the vessel belongs. In respect to the second class, the local jurisdiction is based upon the principle that the protection accorded to foreign merchantmen in the French ports cannot divest the territorial jurisdiction so far as the interests of the State are affected; that a vessel admitted into a port of a State is of right subjected to the police regulations of the place; and that its crew are amenable to the tribunals of the country for offences committed on board of it against persons not belonging to the ship as well as in actions for civil contracts entered into with them; that the territorial jurisdiction for this class of cases is undeniable. In the United States, the jurisdiction asserted in respect to foreign merchant vessels, their officers and crews, is far more extensive. The principle upon which the American law proceeds is that wherever a wrong has been committed if an appeal is made to an American tribunal in American waters, the jurisdiction in respect to that wrong is founded. We do not here speak of offences which come within the province and provisions of an Extradition Treaty, in respect to which the American Courts would have no jurisdiction. What we mean to point out is, that claims, torts, and offences, committed on board foreign merchant ships by the members of the ship's company against each other, in respect of which the French tribunals would decline a jurisdiction, in the United States would be dealt with by the local executive without hesitation, and occasionally without

the co-operation or concurrence of the Consular official of the State to which the ship belongs. In this country the jurisdiction of our Courts, in respect to foreign merchant ships and their crews, proceeds upon a principle more intelligible than that which guides the French tribunals, and more equitable than that which opens the American Courts to claims preferred by foreigners, *ex-parte*. The right to deal, within British territory, with the subjects of a foreign State who offend against our laws, has been at all times broadly asserted and exercised. There are cases, no doubt, where for offences committed by foreigners on board a British ship on the high seas, the offenders are remitted to their own jurisdiction; but offences committed on British waters are cognizable by our tribunals, and our Courts are, moreover, open to foreign seamen and others who think proper to refer their claims against each other to those tribunals for decision. The modern statutes, relating to the High Court of Admiralty, not only give that Court jurisdiction within the body of a county in a cause of damage, but enable it to entertain suits between British or foreign ships for collisions occurring in foreign waters, though it may be observed a similar jurisdiction had been, previously to the passing of these statutes, in many instances, exercised by the High Court. By the 527th Section of the Merchant Shipping Act, 1854, it is provided that whenever any injury has in any part of the world been caused to any property belonging to Her Majesty, or to any of Her Majesty's subjects, by any foreign ship, if at any time thereafter such ship is found within three miles of the coast of the United Kingdom, it shall be lawful for the Judge of the High Court of Admiralty, upon cause being shown that such injury was probably caused by the misconduct or want of skill of the master or mariners of the ship, to issue an order to detain her until the owner or master has made satisfaction, or has given security to abide the event of any suit that may be instituted in respect of such enquiry; and it has been decided that under this statute the Court has authority not only to arrest but to proceed to judgment. The reference in the above cited clause to the three mile limit, brings us to a consideration of the extent within which the jurisdiction claimed for and exercised by the municipal law of this country may be exercised. The maritime territory—or "marine territorial" of a State, as it is termed by the American Jurists—is conterminous with the ports, harbours, bays, and mouths of rivers, and adjacent parts of the sea enclosed by headlands belonging to that State. By the general usage of nations, there is superadded to this extent of territorial jurisdiction a distance of a marine league, the distance to which, at the time the usage was introduced, a cannon shot would carry from the shore. Within these limits, by common consent, the rights of property and territorial jurisdiction of the State are absolute, and exclude those of any other nation. It may be here observed, however, that for

Customs' purposes, this country under her Customs' laws has been in the habit of exercising a jurisdiction by no means bounded by the three mile limit, and a similar provision is contained in the revenue laws of the United States. We do not believe, however, that in the event of a maritime war any extension of the three mile limit would be claimed or conceded. It is the accepted limit of territorial jurisdiction adopted by every maritime State, Spain alone excepted, which country claims a marine territorial of six miles—a pretension which has never been conceded, and certainly would not be in the event of maritime hostilities.

Enough has been said to show that the German ship *Schiller*, when she was overtaken by the casualty which produced so profound a sensation, was within the British jurisdiction, and that the British Government in directing an enquiry into all the circumstances of the case, was in the exercise of an undoubted right. The finding of a single body would have justified the coroner of the district in proceeding to an inquest. It was, of course, competent for the German Government to say they would not assist the investigation, and in that case material evidence might have been withheld. The law which governs such cases is plain enough. Where a casualty occurs upon the coasts of these islands, whatever the nationality of the ship or her crew, the right of investigation into the facts connected with the casualty is a right inherent in the Sovereign, represented by the Executive, and is recognised and enforced by our statute law, and if its exercise were neglected from any doubts as to the competence of the inquiry, the result would be most unfortunate and mischievous.

COLLISIONS IN THE ROYAL NAVY.—We have abstained from making any remarks on recent cases, because we do not think it fair to offer opinions while they are *sub judice*. As soon as all official tribunals have finished their labours we intend to give an exhaustive article on the whole subject. Our pages are intended for the record of impartial and quiet judgment and experience, rather than for exciting discussions on current topics. In the one case we record facts and give opinions that are useful for reference; in the other we should be pandering to cheap excitement, which may be indulged in if desired by the perusal of other publications.

MR. CAVENDISH BENTINCK, M.P., ON MERCHANT SHIPPING
• LEGISLATION.



MR. CAVENDISH BENTINCK, the member for Whitehaven, who is Parliamentary Secretary to the Board of Trade, has embraced two opportunities of speaking out on the subject of Merchant Shipping Legislation. His remarks are so good, so much to the point, so accurate, and were so courageously spoken, that we think them very worthy of reproduction in our pages. Our Magazine is to be found in the library, and on the office desk of most well to do persons connected with shipping, both at home and abroad, and few large ships are without it, therefore we believe that in making public amongst the shipping community Mr. Bentinck's complete speeches, we are doing good service to the cause of truth, the only cause which has been lost sight of in what has not inaptly been termed the "Plimsoll Craze." When statements in the cause of "humanity" and the "poor sailor" now appear in the public press, they are too often mere "Plimsolisms," which may with safety be accepted as containing seven-eighths of fiction and one-eighth of fact. When, however, truth is publicly spoken, it is well that attention be drawn to it, that it be recorded where those who are concerned may see and understand it, in order that a right judgment may be arrived at and proper action taken. The speeches of the Dukes of Richmond and Somerset and of Lord Carlingford, and Sir Charles Adderley, some of which we reprinted in our last number, are ably and valuably supplemented by these later speeches.

Mr. Cavendish Bentinck has been the first and the only person to speak upon the subject of our Mercantile Marine with any degree of courage. It is easy enough to swim with the stream of popular sentiment and thus to reach the haven of popular favour. To use phrases half pious and half sensational, phrases covering exaggerated and distorted statements with the slime of cant and sentimentalism, is a sure way to win the applause of the superficial multitude. But any attempt to stem the tide of popular feeling, while it will call forth the admiration of the thoughtful and wise, must also for a time place the man who is bold enough to do so at a popular disadvantage. This the truth-teller can bear, for he no doubt has the sustaining hope that truth is great, and will ultimately prevail over mere sensational and frothy speech. This hope we share with Mr. Bentinck, and therefore do not fear any permanent ill-effects from the pious and humanitarian "fabrications" which have of late so strongly stirred the public mind—although we have some misgiving lest in the angry excitement now aroused, some hasty action should be taken before truth asserts herself, which may prove temporarily injurious to the interests of the British Mercantile Marine.

Mr. Bentinck has, while speaking plainly and wholly in the cause of truth, not over stated his case, and his speeches will afford a valuable record for reference; in our reprint we have made sundry references by footnotes, which will enable our readers to refer for themselves to corroborative sources.

WHITEHAVEN, AUGUST 26, 1875.

At a banquet at Whitehaven on the 26th August, 1875, Mr. CAVENDISH BENTINCK, after having returned thanks on behalf of Her Majesty's Ministers, and referred to the events of the last Session, continued as follows:—But it is not to discuss the various measures of the past Session that I have now risen. It is more to call your attention to one which, unfortunately, was not successful—that is, the Merchant Shipping Bill. I must ask your patience—and I am sure you will give it—if I occupy the whole, or nearly the whole of the time that properly lies at my disposal, in endeavouring to set this question on its legs before you. This measure is one highly interesting, not only to myself, as a member of the Department of the Board of Trade, under whose conduct it was, but also to the inhabitants of the town which I have the honour to represent in Parliament, inasmuch as it affects, perhaps, the dearest interest—the interest to which they are most closely attached—that is, the industry of merchant shipping. Let me remind you that two principal parties whom I highly honour have been placed upon their defence in this matter: first, Her Majesty's Government, and then the shipowners of this country. Arguments and assertions have been widely made against both—that neither have performed their duty towards the public. No doubt it was a very unfortunate circumstance that the Merchant Shipping Bill was withdrawn; and I must confess that I felt as much grief and mortification at the result as any supporter of the Government or of the Seamen could possibly have felt under the circumstances. But before stating my own views, permit me to recount briefly the leading facts which have brought about the present situation. An agitation originated, in the first instance, with Lord Hampden then Sir John Pakington, and was continued by Mr. Plimsoll in 1871; and from 1871 to 1873 a number of cases of loss of life at sea, and the perils of seamen, were laid before the public. The consequence was that in 1873 a Royal Commission with ample powers was issued. The Duke of Somerset was appointed chairman; one of its members was the Duke of Edinburgh, and there were also upon it a number of gentlemen holding every variety of opinion upon shipping questions. That Commission exhausted the subject, examined every witness who presented himself, and after their inquiry had extended over nearly two

years, they presented their report in the month of July last year. They had considered all the questions of safety at sea, wreck inquiries, and the numerous branches of the subject. The duty of the Government naturally was, as far as they could, to found any measure they proposed to introduce to Parliament upon the Report of the Commissioners. This was done, and in the month of February last the Merchant Shipping Bill of the Government was laid on the table. This Bill met with a large amount of independent criticism. A cloud of amendments was placed on the paper, many of them, however, containing suggestions so wise and reasonable that the Government thought fit to entertain them. The Bill, therefore, stood over, to be partially reconstructed according to these numerous suggestions made; and in its amended form it was in the hands of members in the third week in April. Let us now see what were the provisions of the amended Bill as regards safety of life, for that is the main point. The Royal Commission having anxiously considered all the allegations of those who maintained that life at sea was not sufficiently safe, had, after long debate, come to one positive recommendation only, and that was that there should be placed amidsthips on every British ship what we call the vertical ladder line of feet, with the zero-point at the highest deck up to which the ship was perfectly strong and watertight. If you read the report you will find that on this subject of insuring safety by dealing physically with the hull itself, that was the only positive recommendation to which they could agree. That provision was at once introduced into the Bill of the Government, but it was found to be beset by so many practical difficulties and ultimate absurdities that on reconsideration it had to be withdrawn. In the reconstructed Bill the main provisions for safety proposed by the Government were what is now called the shipowners' load-line, and also the increase of the liability of shipowners. The Bill, as I have said, was in the hands of members in the third week of April, and it was considered in Committee on the 18th, 19th, and 21st of June, but from April to July we heard nothing of the safety of life at sea, or of the dangers of sailors, and during those three long sittings there was not a word said about them. The whole of the time was consumed by the Committee in discussing the constitution of new Courts of Inquiry, seamen's wages, the great question of advance-notes, and also in wrangling about the existing laws of discipline as regards sailors. During these debates Mr. Plimsoll himself was, as regards the safety of sailors, chiefly conspicuous by his silence. After the 21st of June the Government found that they had other measures to go on with, and the Bill was adjourned for a time; and on the 22nd of July it was withdrawn. Then followed the "dramatic scene," of which you have all read, and in which Mr. Plimsoll was the principal actor. His proceedings evoked such a strong expression of opinion on

the part of the public that something should be done, that the Government brought in the temporary measure which has become law. Well, the case against the Government is just this. It is said that by want of legislation on the part of the Government thousands of valuable *seamen's* lives were annually lost, and these have been estimated by Mr. Plimsoll at 6,927 and by the *Times* newspaper—which is not a sensational authority—at 5,000. These are said to be seamen's lives, and, therefore, do not include the lives of passengers. It is also said that by the operation of cruel, harsh, and unjust laws, hundreds of honest men were yearly thrown into prison for refusing to sail in vessels which they themselves knew were rotten; and that the Government in failing to pass a measure of relief in these matters has forfeited the confidence both of Parliament and of the country. But I think that I can satisfactorily refute these charges against the Government and the ship-owners. Let me call your attention to the position of this question, even assuming that the figures I have quoted from Mr. Plimsoll are right, and that this loss of seamen's lives does actually take place. Well, if that is the case, may I ask the Opposition, and Mr. Plimsoll and his friends, why they were so dilatory in bringing forward their measures of safety. The measures of safety proposed by the Government, the shipowner's load-line, and the increase of responsibility were well known in the month of April to be the policy of the Government. Well, if that policy was wrong, and if these provisions for safety were not sufficient, why then did not the Opposition demand urgency, for the discussion of the question of safety of life at sea? And if they had done so, is it not clear that my right honourable friend at the head of the Government would have granted it immediately? But they did nothing of the kind. As I have told you, the 18th, 19th, and 21st of June were entirely taken up with the minor details of the Bill, and not a word was said about the safety of life until after the 22nd of July, when Lord Hartington, by a manœuvre, which was most dexterous, tried to turn that which was not in any sense a party question into a means of damaging the Government. The Government, very wisely, adopted the only means they could; and they brought in a Bill, which was, in point of fact, an extension of the powers granted to the Board of Trade by the Act of 1873, and which empowers them to appoint surveyors at certain ports throughout England with power to stop ships that may be unseaworthy, without first obtaining leave from the Board of Trade. That Bill came on, and then there was an opportunity for discussing Mr. Plimsoll's celebrated nostrums—the compulsory load-line and compulsory survey—but these questions were not even raised. Mr. Plimsoll himself, who had been most successful in frightening people throughout the country into the belief that nothing could be right unless his

particular principles should be adopted, never appeared on the scene of action;* and his friend Mr. Reed (the late chief constructor of the Navy), who represented him on that occasion—although the amendments affecting compulsory survey and the compulsory load-line were actually on the paper—ran away from these positions without firing a shot; and no one even dared to debate them in Committee. (Laughter.) That showed very clearly that the policy of the Government was not so far wrong after all, and that if, by reason of the delays that had occurred in providing for the safety of life at sea, the shipowners and the Government were “murderers” and “villains,” and deserving of all the epithets of a choice vocabulary which some people heaped upon them, so also were the Opposition, so also were Mr. Plimsoll and the friends of the sailor himself, and so also was the public press. (Cheers.) It is quite absurd to suppose that you could by any measure taken so late in the session really contribute to the safety of the life of the sailor, who ought to have been protected in the spring and summer as well as in the autumn and winter. (Hear, hear.) But I have another defence to make, which, I think, is more complete, and which will altogether answer the accusations made. It is simply this: The alleged statistics regarding loss of life which have been distributed broadcast are not

* What Mr. Bentinck points out is quite true. The same abstinence from assistance was adopted by Mr. Plimsoll in 1871 and 1873. He always ridiculed those Acts until lately; but it now appears that the Acts of the Legislature, in which Mr. Plimsoll never in any way assisted, and which he openly ridiculed as mockery and trifling, are claimed for him as his work; and for having, as *now alleged*, actually passed the Act of 1873, which is henceforth to be called the “Plimsoll Act,” the honourable gentleman is to have a statue. We assure our readers that this is not fiction, but is a real, sober statement, vouched for under the hand of his Statue Committee appointed to collect pence from the working men. The following we really think contains something within the category of a “scandalous fabrication.” This extract from the circular of the Statue Committee (which consists, in great part, of shipwrights and other persons who have profited by repairs done to ships recently) shows one reason for erecting the statue:—

“THE PLIMSOLL STATUE FUND.

“The persistent and unwearied exertions of Mr. Samuel Plimsoll, M.P., are too well known to need much of the character of descriptive eulogy. Suffice it to say that, having been engaged in trade, he, at a period of life when most other men would have made use of the position and experience attained to realise for themselves a handsome fortune, retired from business to devote the remainder of his life to the cause of the merchant seamen. In this cause he has worked with such success as to have aroused the attention of the country, and to have passed the *Plimsoll Act of 1873*, which,” (despite the assertion as to mockery and trifling) “there can be no doubt, has been the means of saving hundreds of lives.

“It is scarcely needful to say that such services as Mr. Plimsoll has performed are worthy of a public recognition, and at a meeting held on the 9th of August, 1876,

true, and are almost, I may say, worthy of an epithet that is now becoming a common one—they are, in point of fact, a scandalous fabrication. We have returns ready at hand before us, made up to the 30th of June, 1874. These returns were in the hands of members of Parliament, and accessible to all who chose to read them. I have gone through them very carefully myself, and I have caused them to be gone through by the officials at the office that I have the honour to be connected with, and I can guarantee that as far as figures go they are absolutely and positively correct. I will try to produce them from memory. The number of men in the British Mercantile Marine is computed to be about 840,000. The tables relating to loss of life compiled from the Wreck Register for the year ending 30th June, 1874, comprise all losses of life happening to passengers as well as seamen through casualties to ships of the United Kingdom or British possessions wherever they may have been lost; and to foreign ships lost within a radius of ten miles of British territory. It also includes about 30 missing vessels, involving the loss of over 500 seamen's lives, which, although presumed to have been lost before the 30th June, 1873, were not reported until after that date. The total number of seamen included in these returns as having been lost during the above period is 3,089. Deducting the number lost by strandings, 570; collisions, 88; and other causes, 252, making a total of 910; the number of seamen lost in missing and foundered vessels, to which Mr. Plimsoll's remedies would only apply,

at the Cannon Street Hotel, it was resolved that a Committee, whose names are, appended hereto, should be formed to collect subscriptions, and to have a statue of this true seaman's friend, and the friend of his country, erected on some public spot near to the docks in London."

On this a writer in the *Shipping and Mercantile Gazette*, a paper which has always consistently been with the *Nautical Magazine* in this matter, observes pungently:—

"Your readers will, no doubt, as I was, be somewhat startled at what the services of Mr. Plimsoll are supposed to consist, namely, that he has worked with such success 'as to have passed the Plimsoll Act of 1873!' I never heard of such an Act; in fact no such Act exists; but that is of no moment in a humanitarian agitation, in which facts are ignored or invented as necessity may arise. The Merchant Shipping Act of 1871, under which the status of the sailor has been raised and the responsibility of the shipowner carefully defined, passed in the teeth of the honourable member for Derby, and was characterised in his wonderful book in a severe way. He says of it—'What mockery, what trifling is this?' And, being convinced of its mockery and trifling, he never gave the slightest assistance inside or outside the House to the passing of the Act of 1873—an extension on the lines of the Act of 1871, which he has always ridiculed. And now we are gravely asked to subscribe for a statue for him on the ground that he passed the Plimsoll Act of 1873! By all means let him have a statue, and let us bear in mind that it is obtained on assertions as accurate in every way as the majority of assertions made use of during the 'Plimsoll craze.'"

was 2,179. Of these 2,179, 1,926 were lost in missing vessels, losses of which none can tell the cause; but it is known that about half of the finest missing and foundered vessels were classed in Lloyd's, or in Liverpool, and probably many others in local, colonial, and foreign registers, and 1,111 seamen's lives were lost in these classed ships. It is, therefore, not the 6,927 seamen of Mr. Plimsoll, nor the 5,000 men of the *Times* newspaper, with whom we have to deal, but 2,179, of whom more than half, *i.e.*, 1,111 were lost in classed ships. Consequently, only 1,068 seamen are reported to have been lost in ships not known to have been classed, including fishing boats and vessels engaged in coasting trade; and thus it is seen how few seamen would be saved by compulsory load-lines and surveys, and by interfering with insurance and loading, and by other restrictive measures. Moreover, we must not conclude that any great proportion of this 1,068 seamen would have been saved by any of the proposed remedies, for many of the ships in which they sailed had probably been surveyed and classed in local clubs, and a large proportion of them may have been lost by collision, striking on sands, rocks, or icebergs, or by explosions, fire, or other casualties that overtake the best found ships in the world, or through bad seamanship, errors in navigation, or perhaps some of them by original faulty design. But in addition to the Wreck Register, we have another Parliamentary Return made up by the Registrar-General of Shipping and Seamen, and showing the number and cause of the deaths of seamen reported to the Board of Trade during the entire year 1874, as having died in the British Merchant Service, and, therefore, six months later in date than the Wreck Register. This return is not prepared with the same facilities for obtaining information as the Wreck Register, but still, in substance, it is invariably found to be correct; and it is a satisfaction to me to state to you that this return shows a smaller loss of life than the Wreck Register, because the total number of seamen drowned by wreck is shown to be 1,819 only. That number is, as I have pointed out, for the year ended December, 1874, whereas the Wreck Register tables are for a year ended June, 1874. The figures in the Registrar-General of Seamen's return, of course, will bear a favourable comparison with the 3,089 returned by the Wreck Register, and the number of deaths due to what are termed preventable causes, instead of being 1,068, will probably not amount to more than 700. If you look at the enormous number of men in the Merchant Service, and the great perils that they have to encounter in the arduous profession to which they belong, although it is a sad thing that so many men should be lost at all, yet out of 387,624, if you have only 1,068 lost by causes alleged by hostile critics to be preventable in a year, it really does look as if the shipowners of this country were not guilty of the heinous and atrocious

crimes that are laid to their charge. (Hear, hear.) I confess I feel very strongly on this matter. As I said to my friend, Mr. John Hodgson, at the Odd Fellows' anniversary the other day, I was a shipowner in Whitehaven before he was born; and although I have not been a shipowner in Whitehaven ever since, I have in the shipowners of Whitehaven many of my oldest friends, and as honest and honourable men as any throughout the country; therefore it gets to the bottom of my parliamentary patience to hear these abominable and outrageous denouncements hurled at their heads when there was no one to answer them. Truth, however, will out at last, and I hope that you will study the figures I have given you, so that you will be able to go about with a defence of the British shipowners. It is part of the business of a member of Parliament to be exceedingly wearisome and tiresome, and he is fortunate when he gets an audience such as you are to listen to such dry fact. (Hear, hear.) If you want to know the real cause of loss of life at sea, you must look at the Wreck Register. What does it tell us? That (excluding altogether cases of collision which do not raise the question of seaworthiness) there have been 285 inquiries during last year into wrecks and casualties, and that out of those, while there were only 25 or 30 due to unseaworthy ships, to defects in equipment, to faulty construction, to overloading, or to bad stowage, there had been no fewer than 170 due to the incapacity and negligence of seamen. That does not apply to us at Whitehaven, because on this coast we have very excellent seamen, and few ships are lost here. The losses are, unfortunately, in ships more to the south of England, where almost anybody is supposed to be good enough for a sailor. (Laughter.) Under the advance-note system, which the Government tried according to the recommendation of the Royal Commission to abolish, they are supplied with drink, put on board vessels without recommendation, and often desert to lodge some unfounded complaint against the ship at the first opportunity. They share with the crimps, or rather the crimps share with them the profits of these dangerous and demoralising proceedings. It is not the marine insurance, nor the compulsory load-line that you have to deal with in this matter; you must get at the bottom of the evil. In the south of England you must try to educate our sailors and raise them to the same standard as those in the north; and place them out of the power of the crimps, but for whom there would not be much said about the imprisonment of seamen. We have heard a good deal about the imprisonment of sailors, and how they are thrown into prison because they won't sail in rotten ships. We have had Sir William Harcourt, who "indulges in pompous heroics," and Mr. Evelyn Ashley, the son of a nobleman, eminent for piety and humanity, Lord Shaftesbury, flourishing returns in our faces about shipowners taking poor sailors before the magistrates and having them cast into

prison, but what are really the facts of the case? The total number of seamen imprisoned during the years 1870, 1871, 1872, and 1873 was 2,287; the number of seamen imprisoned for refusing to sail, on grounds of ships being unseaworthy, was 266; the number of ships alleged by seamen to be unseaworthy was 64; the number of these which proved themselves seaworthy was 55; and the number of these alleged unseaworthy ships afterwards lost was 9. Of the 9 alleged unseaworthy vessels thus lost, 4 were stranded, 1 was burned at sea, and 4 foundered at sea, but of these 4 foundered vessels, 2, namely, the *Coringa* and the *Balaclava*, had been surveyed and found seaworthy before proceeding on their voyage. In another case, that of the *Anna Frances*, the owner was acquitted of all blame, and the master's certificate was suspended for two years. The remaining ship was the *Jane Leech*, which foundered near Ferro Island, on the 29th of March, 1871, and with respect to which no inquiry has been held.* Therefore, of all the ships which had been alleged by seamen to be unseaworthy, there was only one to which any suspicion could attach, and, to the best of my belief, that ship† was not one of doubtful character. That is another very valuable fact that you can take away with you, and which will further show you that the charges against the shipowners and the magistrates of the country are generally without foundation. I thought it my duty to lay this before you in order that you may meet the accusations that are brought forward. (Hear, hear.) Mr. Bentinck then proceeded to speak on general topics, and sat down amidst loud and protracted cheering.

WHITEHAVEN, 31st AUGUST, 1875.

An influential and numerously attended meeting of the shipowners of West Cumberland, which was attended also by gentlemen from Liverpool and other ports, interested in merchant shipping, was held in the Town Hall, Whitehaven, on Tuesday, August 31st. The chair was occupied by Mr. JOHN HODGSON, of Whitehaven, who said he was exceedingly pleased to meet them on the present occasion. It was a large, and, to his mind, influential meeting on a very important subject. (Hear, hear.) The meeting was aware that a great deal had been said

* No lives were lost in the four vessels that foundered (*Balaclava*, *Coringa*, *Anna Frances*, and *Jane Leech*).

† The *Jane Leech*, of Glasgow, belonged to *Allan, Gow, and Co.*, and was bound from Glasgow to Madras with water pipes. She encountered severe weather, and was abandoned in consequence near the Canary Islands, on the 29th March, 1871. Owing to the heavy weather, the iron pipes had broken adrift in the hold, and had knocked holes in the vessel's side.

lately both inside and outside of Parliament in respect to the Merchant Shipping Bill. On all questions there were two sides—it did not matter what the question was, a large one or a small—there were always two sides to it. He did not suppose that they had one gentleman present who was at all disposed or would like to send a ship to sea unless she was thoroughly seaworthy, perfectly equipped, and quite prepared to go on her voyage—(applause)—and it had been the boast of England to have the ships of her Navy and merchantmen second to none. (Applause.) It seemed strange to him now that this outcry and uproar about rotten ships—that they were all going to destruction, and all going to be ruined at once—arose just at a time when they were in a transition state, going from wood to iron, for iron ships could not become rotten so very fast. Shipbuilding had been a pet business in Whitehaven—(hear, hear)—and if they went to Harrington, there were Messrs. Williamson and Son; if they went to Workington, there was the yard managed by the Fells; and if they went to Maryport, there were the Ritsons and the Woods. He classed the three ports together, and it might appear egotistical in him to say so, but he declared in the face of the world that there were no ports where they had built better vessels than the Maryport, Harrington, and Whitehaven vessels. (Applause.) Lloyd's adopted many requirements that they had quite exceeded and gone beyond, for the reason that they would have been forced upon them very likely had they not done so. They had tidal harbours to contend with, iron ore and pig-iron to take in, and these heavy cargoes as their ships were well known. (Hear, hear.) Mr. Bentinck, their esteemed member, in his speech last Thursday, took up the allegations of Mr. Plimsoll in a masterly style. (Hear, hear.) He was a member of the Government, and his figures he (the Chairman) would vouch for that they were correct, and Mr. Bentinck could back up his own figures against Mr. Plimsoll and the *Times*, and the leading articles that had been written since he had delivered his speech. Mr. Plimsoll had taken in all the losses both of foreign and English vessels, and it appeared that the return went to a radius of ten miles beyond the English possessions, and it was very likely to be a good deal more. Mr. Bentinck was able to hold his own against Mr. Plimsoll or anybody of the kind; but there was one subject that he wished to bring before them, and that was the case of the *Columbus*. Mr. Plimsoll had made some rather illiberal remarks upon that vessel, and if Mr. Plimsoll had been there he (the Chairman) would have said the same thing to him. (Applause.) With their indulgence, he would just read a short extract from a letter from Mr. Plimsoll upon the *Columbus*, for he did not want to speak on the subjects which they did not know, but those that they did know. (Applause.) It was as follows:—

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"I will mention one case at a venture, as I do not know whether inquiry was held or not, and as I am just leaving town I have not the means of ascertaining. A three-masted schooner, called the *Columbia*, was wrecked at New Brighton early this year. The following is the description of her timbers: 'People here are crying out, "Shame that ever poor sailors are sent to sea in such rotten vessels, thereby endangering their lives." I have seen her, and examined her, and I can literally, and did, pick to pieces with my fingers many parts of her. Her bottom is just like black mud. Had she struck on the bank, she must have gone to pieces in five minutes, and every one have perished.' I do not know whether you ordered an inquiry in this case or not; I simply bring it to your notice."

Now there was a statement, a sensational statement, accepted as correct, and he gave a denial to it, and he said it was a tissue of falsehoods—(hear, hear)—and that there was not one word of truth in it. (Applause.) He would read from Messrs. Shepherd and Leech's own writing the statement of the repairs of that vessel, and what was done to her, and he had it ready if he had to meet Mr. Plimsoll, or the Board of Trade, or Parliament upon the subject. (Hear, hear.) The facts of the case were these:—

"The *Columbus* was loaded with a cargo of 270 tons China clay, for Runcorn, and came round the Land's End in heavy weather in the month of February, put into Holyhead through stress of weather, all this time being perfectly tight and staunch. Left Holyhead on the morning of the 8th of March, and was run down before midnight off the Crosby lightship by the White Star steamer *Adriatic*, and the crew left to perish, had it not been for the humane conduct of Captain Farrell, of the Dundalk steamer *Enterprise*, who rescued them, and landed them at Dundalk on the following day."

There was a vessel run down, and it was retailed to the President of the Board of Trade in a letter that she was rotten, that they could pull her timbers to pieces bit by bit, and any new vessel that was lost would be subject to the same thing being said. They had only to witness the collision, ten days ago, of Her Majesty the Queen's yacht and another vessel. There was no outcry against Mr. Heywood's yacht; but the poor *Columbus*, forsooth, was rotten! and picked to pieces bit by bit! This vessel was purchased, and she was thoroughly repaired by Messrs. Shepherd and Leech, under the immediate inspection of the surveyor, Mr. Robert Bell—who had, by the way, now got an appointment by the Board of Trade as shipwright surveyor. She was fully and well repaired. He did not want to trouble them too much, or else he had got an account of the repairs to satisfy Mr. Plimsoll, and to satisfy that meeting, and he would give those repairs, for he thought it desirable, seeing the vessel's

condition had been brought in question by Mr. Plimsoll and the panic-mongers. (Applause.) The Chairman then read the following list of repairs :—

“Port side.—Amidship, all plank removed from keel to wales, put in eight new futtocks, three stanchions, three strakes bilges, a portion of flat bottom plank, and plank above bilge new, all re-treenailed and bolted, two new planks in topstrakes, new gunwales, rails, bulwarks, and side hawses. Starboard side.—All re-bolted to wales, gunwales renewed, new rails. On deck.—New greenheart coamings, all new hatches amidships, portion of deck renewed, new fore scuttle and coamings, new crab-winch and stanchions, new pin-rails and wash strake, new oak fall bit, port side midship length of waterways. Inside.—New keelson, three lower hold beams, five iron knees, each side extending on to the floors, two bolts in each floor. Masts, &c.—Three pitch pine lower masts, pitch pine foretopmasts, all other spars Baltic and spruce. Rigging.—All new, all standing rigging best European hemp, stays all best galvanised wire. Sails.—All new, of Moore's Manx canvas. Two new iron pumps, chambers $5\frac{1}{4}$ inches.”

He thought the *Columbus* was well and substantially repaired, and Mr. Shepherd was present, and prepared to certify that. Was it not so?

MR. SHEPHERD: Quite so, I believe. (Applause.)

A VOICE: Perhaps Mr. Shepherd will state the cost of the repairs.

The CHAIRMAN said the repairs cost £1,312, and she had a double outfit—a single outfit at first, and when she went foreign, an extra outfit—at a cost of £1,400. He would just say in conclusion, that it was their bounden duty to do everything that lay in their power for the preservation of life and property, and to ward off all disasters that they possibly could, but it was his firm conviction, let them do what they would, to the end of time, there would be disasters, and to the end of time, there would be misfortunes. (Applause.) Captain Key would now propose the first resolution. (Applause.)

Captain KEY said, that when he came into that room, that morning, he had little idea that he would be asked to propose a resolution amongst such an influential body of shipowners as were present, but being asked, he had no hesitation in doing so. It was not a very arduous undertaking, and he would suggest something which might be added to it. The resolution that he moved was this :—

“Considering that more life is lost in ships that are known to have been classed, than in any other ships, this meeting is of opinion that the compulsory classification and the compulsory survey of all ships, should be resisted as vexatious and as absolutely useless.”

He would say that the compulsory classification of seamen was quite necessary. (Applause.) He thought that every gentleman who had

been connected with the sea, as he had been—he served his time in Messrs. Brocklebank's employ—would be aware that at that time every ship was compelled to take so many apprentices, and they were bound to serve their time properly, and if a man or boy could not become a sailor in four years, he had better leave the sea at once. (Applause.) They shipped people on board ships now who had never been at sea at all before. (Hear, hear.) He remembered being in Liverpool with a friend of his who had got a sailor on board whom he had told to go aloft to loose the maintopsail, and he could not get past the roundtop, and said he had never been at sea before. He had a very strong opinion on the subject that if the compulsory apprenticeship system was reverted to, as it used to be formerly, they would have a better class of seamen—(hear, hear)—people brought up to their profession, and much more able seamen. (Applause.) As their worthy member said on Thursday last, he believed there were more ships lost through the inefficiency of the seamen than through the inefficiency of the vessels themselves. (Hear, hear.) With these observations he begged to move the resolution entrusted to him.

Captain GAMBLES seconded the motion, and it was carried unanimously.

Mr. HARGROVE proposed the next resolution, which was as follows :—

“That this meeting, viewing with alarm the legislative restrictions imposed upon British shipping to the advantage of foreigners, prays Her Majesty's Government not to forget that trade has its legitimate risks, and not to adopt the erroneous theory that a too arbitrary interference with ships in port will materially lessen loss of life at sea.”

Mr. Hargrove addressed the meeting at great length, directing his observations to certain cases in “Our Seamen”—Mr. Plimsoll's book—and the nonsense he had written in it. At page 25 they found the following passage :—

“If a manufacturer or merchant ashore fails, the claims for wages of his workmen are a first charge upon his estate, and must be paid in full. No such provision applies to seamen, and I know of many cases of the greatest hardship which are the result. In one case known to me the crew of a ship returned from a very long voyage (eighteen months), when the ship and cargo were seized by the mortgagee, and the seamen, who were entitled to some £50 each as wages, were sent adrift without anything.”

He should like to ask any of them, who understood the Merchant Shipping Act, when such a thing as that was in existence—when the time was that a mortgagee could take possession of the ship, and the seamen could receive no wages? Mr. Plimsoll asserted it as a positive fact, but he (Mr. Hargrove) did not think that anyone there was prepared to say

that they had heard of such a thing, or that they knew of such a thing—that sailors could earn wages to any amount—much less to £50—without the first claim upon any freights that were to be received was the wages of the seamen. If that was correct, Mr. Plimsoll must be incorrect, to say the least of it. Taking another instance, he read from page 27 of the same book, as follows:—

“ You may even buy an old ship, 250 tons burden, by auction for £50, sold to be broken up because extremely old and rotten; she had had a narrow escape on her last voyage, and had suffered so severely that she was quite unfit to go to sea again without more being spent in repairs upon her than she would be worth when done. Instead of breaking up this old ship, bought for 4s. per ton (the cost of a new ship being £10 to £14 per ton), as was expected, you may give her a coat of paint—she is too rotten for caulking—and, to the dismay of her late owners, you may prepare to send her to sea. You may be remonstrated with twice, in the strongest terms, against doing so, even to being told that if you persist and the men are lost, you deserve to be tried for manslaughter. You may then engage men in another port, and they, having signed articles without seeing the ship, you may send them to the port where the ship lies in the custody of a runner. You may then (after re-christening the ship, which ought not to be allowed), if you have managed to insure her heavily, load her until her main-deck is within two feet of the water amidships, and send her to sea. Nobody can prevent you. Nay, more, if the men become restive you may arrest them, without a magistrate's warrant, and take them to prison, and the magistrates (who have no choice, they have not to make but only to administer the law) will commit them to prison for twelve weeks with hard labour; or, better still for you, you may send for a policeman on board to overawe the mutineers, and induce them to do their duty! And then, if the ship is lost with all hands, you will gain a large sum of money, and you will be asked no questions, as no inquiry even will ever be held over the unfortunate men, unless (which has only happened once, I think) some member of the House asks for inquiry.”

Did ever anybody know of people having gone and re-christened a ship for the purpose of sending her to sea, and losing her? He thought that such a case as this was perfectly monstrous. Mr. Plimsoll said, in the first place, that a ship of 250 tons might be bought by auction for £50, and he should like to hear a strong protest made on that point. There could not be such a thing ever known here that a ship that was an insurable risk was bought and insured that the owners of that ship might send her to sea, drown her crew, send her to the bottom, and pocket the money. He protested against such a statement, and he had never known such a thing in his life. (Applause.) Mr. Hargrove next went into the

question of insurance, and read the following extract from Mr. Plimsoll's book :—

“ ‘ Mr. —, the witness in question, was then cross-examined by Mr. O'Dowd, and said that he was joint owner of the — with Mr. —, and the ship was bought by them of its late owners for £7,500. They paid down £1,000 in signing the contract, and £1,500 more before the ship proceeded to sea.' Now read this :—‘ June 10, 1870.—The — was insured this day for twelve months, was valued at £13,000! the premium of insurance being eight guineas per cent. ! (Signed) W. M. F——c.' Here you see the owners make a declaration that the ship was worth £13,000, they having only given £7,500, and they actually succeeded in insuring her for £10,000, so securing £2,500 in excess of their real loss when the ship sank, as she shortly afterwards did, with every soul on board ; twenty good, decent, respectable men, as I can personally testify, at least as to several of them, went down in her.' ”

Mr. Hargrove pointed out that the natural inference to be drawn by inexperienced persons on reading this was that the whole margin between the purchase money of the ship and the insurance was gain, no account being taken by them of the repairs, premium for insurance, outfit, &c., which amounted to considerable sums ; and he gave instances in support of his assertions. He further spoke at length against the practice of landmen shipping as able seamen, and expressed his opinion that they should never make such seamen as they had had in days gone by. He alluded to the loss of the *Samuel Plimsoll* and the late collision in the Solent as evidence of the inevitability of accidents happening, and they must try to reduce these accidents to a minimum, to save as much life as they could, and to have their vessels as efficiently manned and commanded as they possibly could. He pointed to the fact that English vessels, to the number of 900, were sailing under foreign flags, and to the danger of this spreading, on account of the evils of restrictive legislation, with some of which he dealt, and he concluded by hoping that it would go forth from that meeting that they were entirely unanimous in recording the view that there was no such thing as destroying men to make money. (Applause.)

Mr. JOHN JACKSON seconded the motion. He contended that if the shipping interest was better represented in Parliament they could more easily contradict such statements as that regarding the *Columbus*, and not allow them to circulate in the inland towns, to the inhabitants of which Mr. Plimsoll's book was addressed. The mischief that was done was in a great measure to be attributed to the *ad captandum* arguments and mis-statements of people who were not in possession of the facts. He thought that Mr. Plimsoll was well-intentioned, but he should not ride

his hobby too fast. If any one went to the pier-head at Whitehaven, and saw the crews that some vessels took with them he would come to the conclusion not that so many but that so few lives were lost. In Liverpool vessels lay in the river twenty-four hours before proceeding on foreign voyages, owing to the condition that 99 out of every 100 of British ships were manned, so that incompetent men might in that way be detected. In this direction the shoe pinched rather hardly upon himself. They had to look to the Mercantile Marine as the nursery of the Navy, but as things were going on in the course of years it would not exist at all. Mr. Hargrove had alluded to the increasing number of foreign vessels. Reference to Whitehaven harbour at the present time would satisfy any one on that point, for three-fourths of the foreign vessels in it were Germans. The whole of our foreign trade was going over to the Norwegians, the Swedes, the Germans, or vessels of other countries. Another weak point was the system of advancing seamen's wages before they were earned. That had no doubt, had a great bearing on the question of incapacity of our sailors—hence the results that Mr. Plimsoll and everyone else deplored. (Applause.)

Captain THOMPSON proposed the next resolution, as follows:—

“That this meeting expresses its sincere thanks to Her Majesty's Government for resisting the impracticable proposals recently made in Parliament, to prohibit deck-loads, and also the proposal to annihilate the short voyage grain trade by preventing the carriage of grain in bulk.”

He directed attention to the fallacy of Mr. Plimsoll's assumption that there was more loss amongst old ships than new ones, and instanced the fact that there were vessels sailing out of Whitehaven harbour 100 and 115 years old, and his opinion was that there could not be a better proof that they had been well kept up during the time that they had been sailing, from the fact that they were sailing still. (Hear, hear.) He thought that the old vessels lost fewer lives than the new ones, and he gave an instance in support of this theory. He urged the necessity for some classification of seamen, and put the loss of many vessels reported missing to the account of fast Atlantic steamers going at an unreasonable and improper speed in a fog. He showed how improperly the regulation that a fourth of the ship's company might demand a survey would press upon the owners, inasmuch as in small vessels two or three, or even one man, might disagree with the captain, and on being spoken to might, without any just cause, put the owners to the expense of a survey.

Mr. WESTRAY FEARON seconded the resolution, and endorsed the observations of previous speakers as to the need for some improvement in the seamen. He expressed an opinion that it was really a fact that the

loss of life was greater in large new ships than in the smaller vessels in the coasting trade, and advocated the principle of restoring compulsory apprenticeship to all vessels proceeding to sea. He reprobated Mr. Plimsoll's conduct in railing as he had done at the shipowners, and asserted that it was uncalled for. (Applause.)

Mr. PATTERSON proposed the next resolution, as follows :—

“Considering the unsatisfactory working of the compulsory testing of chain cables, this meeting is of opinion that any statutory test for ship-building iron would be equally unsatisfactory, and while it would not increase safety of life at sea, it would so materially increase the cost of shipbuilding as to drive that trade into the hands of foreigners.”

He urged that the iron at present in use was of sufficient strength, unless they were to build ships so that when they struck they would go right over the rocks without breaking, and asserted that cables were tested now to a strength which was deemed sufficient; but there might be defects in any testing, and a sudden jerk in letting go the anchor sometimes broke the cable. The effect of saddling shipbuilders and shipowners with such a test would be to drive the trade into the hands of foreigners, and they would have to go and be foreigners themselves. (Laughter.) Mr. Bentinck had put in his hand the preliminary report of the Royal Commission on Unseaworthy Ships, and that report stated:—

“In the year 1870 a Committee of Inquiry into the condition of our merchant seamen was appointed at Liverpool. Their report states that men often obtain their A.B. rating though they are incompetent to perform the most ordinary duties of a sailor. Many masters assert that out of crews of 25, not more than three or four know the compass, can steer, heave the lead, or such like duties.”

The report further stated :—

“The witnesses suggested to the Commission by Mr. Plimsoll did not much assist our investigations, and we lost valuable time in trying to elicit facts from the casual observations and unrecorded recollections relating to former events.”

That, he believed, would be well borne out by any one who had read Mr. Plimsoll's works, because if he was asked straightforwardly what the name of a ship was, he would say, “Such and such a ship,” and would not give open battle and fight it out. (Applause.)

Captain NELSON seconded the motion, and said he would like Mr. Plimsoll to give a practical proof of his sincerity. It was easy for him to talk, and to vilify people in the way he did, but he would suggest that Mr. Plimsoll be requested to get up a company, and take the management of a large number of ships and try the matter for ten years, and prove by his own management of those ships that he would have been able to save both life and property. (Hear, hear.) That, he thought,

they had a perfect right to expect from Mr. Plimsoll. He had no right whatever to act in the way he had done, no right to get up before Parliament and make an appeal to the higher powers of Heaven as to his sincerity, and to speak of men as if they were murderers and man-slayers. He should remember that the powers he appealed to, permitted storms and fogs to exist, and that thousands and thousands of lives would be lost, and no human power could prevent these things. Mr. Plimsoll, therefore, should not appeal to God on these matters at all, he should deal with the matter on a human standpoint, and say that it was the duty of men to protect life and property as much as they could. (Applause.) Captain Nelson concluded by endorsing the views of other speakers, as to the difficulty of ascertaining seamen's qualifications, and the consequent trouble and loss which ensued.

The CHAIRMAN then proposed the following resolution :—

“That this meeting hereby expresses its thanks to Mr. G. Cavendish Bentinck, our Parliamentary representative, for his attendance, and its full confidence that he will endeavour to carry out the views expressed into laws that will be fair and equitable both to shipowners and sailors ; and that he be requested to send a copy of the resolutions adopted to the Prime Minister.”

In doing so, he reviewed the remarks of the previous speakers, and summed up, and supported by his own experience, the arguments advanced against the Plimsoll movement.

Mr. W. WILSON seconded the motion.

The Rev. J. W. COLE asked to put through the Chairman, the question to Mr. Bentinck, if he thought the recent legislation of the Cabinet, or the hasty Bill passed, altogether unnecessary, or what did he consider necessary ?

The CHAIRMAN said that Mr. Bentinck would fully answer the question in the course of his remarks, and he then put the motion, and it was carried unanimously.

Mr. BENTINCK, who was received with cheers, said :—Mr. Chairman and Gentlemen,—It is with very great satisfaction that I meet you here to-day ; but I must remind you that I do not do so as a member of the Government, but simply as your representative in Parliament, responding to the invitation which was addressed to me. Notwithstanding, I think I may say that, substantially, the case of the Government in this matter, and the case of the shipowners stand pretty nearly on the same basis. It has been the duty of the shipowners to resist—and I hope that shipowners in future will resist—the attacks which have so plentifully been made upon them of late years, and to which I shall advert more fully by and by. It does seem to me especially a most terrible thing that this great question of merchant shipping legislation should be

kicked about almost like a football, and to have been for a long time past the sport of political exigencies, or made to furnish requirements for needy political adventurers. That is really, in point of fact, what has taken place, and it becomes us to consider with great attention the causes that have led to results so entirely disastrous to this country. In the first place, answering the question that my friend has put—although it is rather an awkward question—(laughter)—I will tell him that I think the legislation of 1873 has, upon the whole, been very successful. No doubt it may have pressed hardly upon shipowners in some degree, but when you consider the figures that Mr. Hargrove, of Liverpool, has given you, showing that there are 37,000 ships* in the British Mercantile Marine, and that, with all the vigilance exercised by the Board of Trade Officers who are always on the look-out; and with the aid of Mr. Plimsoll and other informers among seamen and the public, there were only 550 stopped from 5th August, 1873, to 30th June, 1875, a period of nearly two years, either owing to suspicion of rottenness, defects in hull equipments, boilers, or machinery, and only 58 for improper loading, or overloading, does that not tell in favour of both parties? Does that not prove that the Mercantile Marine of England is not so full of “coffin ships” as some people allege it to be? And when you find that out of 550 ships detained for defects, 515 were found unseaworthy; and that out of 58 detained for overloading, the whole had to be lightened, does not that show that the Board of Trade have not only acted with caution but with very great judgment when they have interfered? It tells, I say, in favour of both parties—on the one hand, that so few ships out of so enormous a Mercantile Marine have been interfered with at all, and on the other hand, that when stopping has been resorted to by the Board of Trade, it has been done wisely and well. I am, therefore, bound to say that the legislation of 1873 has, on the whole, been successful. I do not think you will find that the last Act—the Stop-Gap Act—as it has been called—this panic legislation that was referred to by the Chairman—will be found to be so detrimental to the interests of the shipowners as he thinks. (Hear, hear.)

I shall now address myself more to the point that strikes me to be of the

* The last annual report of the Commissioners of Customs, shows that during the past year 45,428,957 tons of shipping were entered inwards and outwards as compared with 44,432,989 tons in 1873, and 42,501,025 tons in 1872. During the year 1874, 1,766 new vessels were built and registered, 981 of which belong to the United Kingdom, 16 to the Channel Islands, and 769 to British Plantations. The registered tonnage of the British Empire now amounts to 7,533,492 tons, contained in 36,935 vessels, which are manned by 337,624 seamen. Of these vessels, 24,828 belong to the United Kingdom, 669 to the Channel Islands, and 11,498 to British Plantations. We wait the returns for 1874-5 with anxiety.

greatest importance to the present meeting. It is this : How are we to account for the extraordinary condition of the public mind on this very important subject ? How is it that they have been so led astray ? How is it that the notions on the general condition of the merchant shipping of this country, and as regards the general action of the shipowners, should be so erroneous ? I believe that I myself am the first person who has placed the true figures before the public. I ventured to do so last Thursday, when I, perhaps, occupied the time of a political meeting longer than I ought to have done ; but I was determined not to lose the first opportunity that presented itself to me, of endeavouring, in as condensed a form as possible, and with the best means at my disposal, to acquaint the country with the true state of the case, which had been so studiously, so carefully concealed from them. (Applause.) These statistics show that the loss of life, although sad, is by no means what it is represented to be, and when we see that there are about one thousand seamen's lives, out of 340,000, that could, by any possibility whatever, have been saved by any causes which are alleged to be preventable, it speaks loudly in favour of the cause of the shipowner. What, then, is the reason for this extraordinary state of the public mind ? First, the great indisposition on the part of the public themselves to master figures that were somewhat complicated. The public attention was easily deceived by specious paragraphs in newspapers, or attracted by the clever utterances of an adroit political agitator. Their imaginations were much more likely to be captivated by such paragraphs and utterances ready made to their hands, rather than by prosecuting dry enquiries into Parliamentary returns, and by trying to pick out the truth for themselves from facts which were enveloped in a mass of figures, and could only be arrived at either by a very careful study of Blue Books, or by the perusal from time to time of articles in the *Nautical Magazine* and the *Shipping Gazette*, which are most ex-

* At p. 42 of Mr. Plimsoll's Book, he reproduces the statement that "there is no legal power to prevent a ship from going to sea, no matter what condition she is in;" and he made that statement in the face of the following enactments:—

"Whenever in any proceeding against any seaman or apprentice belonging to any ship for desertion, or for neglecting or refusing to join or to proceed to sea in his ship, or for being absent from or quitting the same without leave, it is alleged by one-fourth of the seamen belonging to such ship, or, if the number of such seamen exceed twenty, by not less than five such seamen, that such ship is by reason of unseaworthiness, overloading, improper loading, defective equipment, or for any other reason, not in a fit condition to proceed to sea, or that the accommodation in such ship is insufficient, the Court having cognizance of the case shall take such means as may be in their power to satisfy themselves concerning the truth or untruth of such allegation.

"For the purposes of this section, the Court shall require any of the surveyors

cellent periodicals, but which, unfortunately, are not read by the general public. It is thus the British public have been led astray; in a great measure, no doubt, by those humane feelings which all Englishmen possess in such abundance, and which do the nation so much credit. Another cause is the conduct of those who more directly represent the shipping interest in the House of Commons, and to whom my friend Mr. Jackson has alluded. They have been aspersed and vilified, and have then been too timid in this matter. The shipping representatives in the House of Commons are principally what we call East Coast men. There is one gentleman, an eloquent and ready speaker, Mr. Eustace Smith, the member for Tynemouth—who has, with perplexing variety, played fish, flesh, and fowl in this business. Sometimes he has half-favoured Mr. Plimsoll, and has then drawn back and condemned the Government, because, as he has alleged, they did not sufficiently protect the interests of the British shipowners against foreign competition; and he actually proposed a motion to that effect!! But when the clauses of the Bill—the defunct Merchant Shipping Bill—were under discussion, it seemed to be his policy rather to embarrass and humiliate the Government by aiding the clap-trap party, than to advance the solid interests of those who supposed him to be a representative of our great commercial interests. In the same way, Mr. Gourley, the member for Sunderland, has followed the lead given by Mr. Eustace Smith. Again, another gentleman, on our own side of the House—Mr. MacIver, member for Birkenhead—has danced as a sort of Will-o'-the-wisp, through all the debates on this question. One never knew when he would not jump up, or where to have him—sometimes he was for one side, and sometimes for the other, but, wherever he was, he was always in the wrong. † (Laughter.) This great difference and divergence

appointed by the Board of Trade, under the Merchant Shipping Act, 1854, or any person appointed for the purpose by the Board of Trade.”

“Every person who, having authority as owner or otherwise to send a ship to sea, sends her to sea in an unseaworthy state, so as to endanger the life of any person belonging to or on board the same, shall be guilty of a misdemeanour, unless he proves that he used all reasonable means to make and keep the ship seaworthy, and was ignorant of such unseaworthiness, or that her going to sea in an unseaworthy state was, under the circumstances, reasonable and unavoidable, and for this purpose he may give evidence in the same manner as any other witness. A misdemeanour under this section shall not be punishable on summary conviction.”

And the public believed him; and would not believe that those enactments existed: but now the efficacy of the principle of those enactments is seen, and now that, under the Act of 1873, some hundreds of ships are stopped, notwithstanding the “mockery and trifling,” these Acts are supposed to be something that the member for Derby has originated instead of opposed.

† Mr. Bentinck has, in his other speech, referred to Mr. Norwood's services. Mr. Rathbone also has done good service.

of opinion amongst shipowners who have seats in the House of Commons, has led, as my honourable friend has most truly observed, to much embarrassment. The third reason is the extraordinary and unfortunate influence—as I think—that Mr. Plimsoll has exercised upon the public mind generally—an influence that has been alluded to by every speaker who has preceded me. I, for one, do not wish to say anything against Mr. Plimsoll, nor to apply any hard names to him, nor to do by him as he has done by others; but there cannot be the slightest doubt that he has both misled—perhaps not intentionally, but still continuously and ruinously misled*—and poisoned the public mind as regards shipowners. (Applause.) I am not the least afraid of speaking the truth about Mr. Plimsoll, although a great number of people are. It is my good fortune, I believe, to have my constituents unanimously at my back on this question, but if I were not so fortunate as to know that I had them unanimously at my back, I should still think it my duty to follow the course that my conscience points out to me to be the correct one. I think that the maritime interests of this great country should be placed above and kept above any mere fear of speaking the truth of Mr. Plimsoll or of anyone. It is impossible—although we may give Mr. Plimsoll credit for good intentions—to

* In his book, Mr. Plimsoll published a letter from a Mr. G. Reid, of the firm of Anthony Gibbs and Sons. Mr. Reid stated that Anthony Gibbs and Sons “took a contract from the Peruvian Government at Lima (Peru) to charter and load ships at the Chincha Islands with guano, and as many as between three and four hundred ships yearly left these islands for different parts of the world. At first they were allowed to load and proceed to sea without either being impeded or surveyed, before or after loading, and were permitted to load as deeply as the masters thought fit. The result of such neglect, losses and casualties very often occurred. *Many ships foundered at sea, sometimes with all hands on board*, others put back to the nearest port in a leaky, disabled state, so much so, that hardly three days would pass without hearing of some accident and loss, through the ships being allowed to load and proceed to sea in an unseaworthy condition.” Let the reader picture to himself this harrowing state of things: “Many ships foundering, sometimes with all hands,” and hardly three days without a casualty. It was, indeed, time that somebody should do something. It was, therefore (that is, after these “many founderings” and “losses of all hands”), determined that the ships should be surveyed before, as well as after loading, the pumps sealed for twenty-four hours, and certificates given as to seaworthiness. What could be more complete and satisfactory than this? Mr. Reid goes on to say, “Soon after the above rules were enforced, a *sudden and wonderful* improvement took place, and during the four years I was surveyor afterwards, *not one ship* foundered at sea, and only about 2 or 3 per cent. met with accidents.” With this tremendous effect before him, Mr. Plimsoll in his book says, “Do not these facts?”—(Mr. Plimsoll forgets they were not facts but unauthenticated statements)—bear me out in saying that if we give proper care to the matter, our losses will *almost entirely disappear*!” We have read the allegation that the survey put a stop to those many dreadful founderings, sometimes with all hands; we have read Mr. Plimsoll’s

look over the very damaging acts that he has committed towards you. In the first place, he has taken advantage of his Parliamentary position to bring grave (I might with truth say almost criminal) charges which he has never substantiated, and not having substantiated these charges, he has never withdrawn them. Now, I am not going into many of these cases, although they are almost legion, but will select three or four examples. I will take the memorable case, in the first place, against Mr. Bates. After Mr. Plimsoll had made use of the violent expressions to which he gave utterance during the dramatic incident in the House of Commons on the 22nd of July, when he applied the terms "murderer," "villain," "shipknacker," and other epithets towards Mr. Bates, and when Mr. Bates proved his innocence to the unanimous satisfaction of the House of Commons, and when the House of Commons, by a unanimous vote, declared that no stain rested upon Mr. Bates, what was the first duty of an honest man? What would any one of you do? An honest and noble-minded man, if in his enthusiasm in a good cause he should happen to make a mistake, or to speak unjustly of his neighbour, regards it as his first duty to make ample and honourable amends; he feels that he must either prove his case or apologise. Mr. Plimsoll did not think fit to do either the one nor the

deductions therefrom, that a universal survey would cause losses almost entirely to disappear; we will, therefore, now look at the facts. Mr. Plimsoll, of course, as a wise man, made the best of his case, and sent his witnesses to the Royal Commissioners, and the result is found in their Report; it is as follows:—"Mr. Stubbs, who was connected with this firm, gave a *somewhat different account*. We were able to obtain from the firm of Gibbs a list of vessels which they had chartered for the guano trade. This list shows the number of vessels lost, abandoned, and foundered, both before and after the institution of this survey. From this list it appears that although the survey may have prevented the taking up of leaky vessels, it *did not diminish the number of serious casualties*. Mr. Reid was in error when he stated that, after the institution of the survey, no guano ships foundered at sea." The Royal Commissioners call this a "*somewhat different*" account of the affair. The tables showed that during the five years when there was no special survey, twenty guano ships were lost, of which number six were missing, four foundered, and one was abandoned. That was during the so-called *unsafe period*. During the six years, when there was a special survey before and after loading, thirty-two guano ships were lost, of which number eight were missing, nine foundered, and three were abandoned. That was during the so-called *safe period*. Unfortunately, no one cares to hunt out the truth, and Mr. Plimsoll's reckless statement stands in his book as gospel to this day. If truth alone were deemed of importance, what a fund of information is contained in the above figures. The Truth is so different from the Statement in Mr. Plimsoll's beautiful book, that not a fact remains of the original statement, and, therefore, not an inch of foundation for Mr. Plimsoll to have built up his astonishing conclusion that "losses will almost entirely disappear" from the Mercantile Marine if the practice of survey of the firm of Gibbs was universally followed.

other. He absented himself from the House, and he has seldom been there since, and on one occasion, his conduct was most unbecoming. But we must remember that Mr. Bates is a powerful man, a wealthy man, a member of the House of Commons, and having a seat there he has opportunities to defend himself. But what are we to think of the individual who brings similar charges against men who have no opportunity of defending themselves? I will give you two instances of my own knowledge. I will take the last first, as it is connected with a constituent of mine—Mr. Shepherd, the owner of the *Columbus*, who has been adverted to. We all know that the *Columbus* was a perfectly sound vessel—that has been to-day proved to demonstration. (Applause.) What does Mr. Plimsoll say? He says that people are crying out against ships being sent to sea endangering the lives of sailors, and so forth; but does he give us his authority? No. The information upon which he relies is anonymous. He does not, or he fears to give the person he accuses the opportunity of testing whether there is or is not any foundation in the charge, nor does he even give any clue to it. I say that that is not straightforward conduct, because if you bring a charge against a man in this country it is always your duty to give him the fullest opportunity of refuting it, if he can. My friend, Mr. Shepherd, has not a seat in the House of Commons—I wish he had—(loud applause)—and this anonymous accusation (referring to the *Columbus*) is written to the Minister and actually published by Mr. Plimsoll in the *Times*, before the person he accused was aware of this grave accusation against him. Mr. Plimsoll says she was wrecked at New Brighton, but he does not, I repeat, even give a clue whereby the accuser may be traced, nor does he state the cause of the wreck. I did not know myself at the time that the *Columbus* was a Whitehaven vessel. I asked at the office, “What are the particulars of this case? What is the evidence in support of what is alleged?” The answer was, “The vessel was not wrecked at New Brighton, but was run down by collision at the mouth of the Mersey with a very large steamer. We have received a piece of timber from the owners of the steamer that ran the vessel down, who wish to allege unseaworthiness against the *Columbus*, but Mr. Plimsoll has probably received his information from one of his spies, as in the case of the *Sultan*, in which there was very grave doubt whether the timber produced in Court formed part of the vessel or not.” Mr. Plimsoll has left England, I see by the papers to-day, for Denmark. He leaves England, having written this calumny against an honourable man, and without knowing how far this stab in the dark may destroy or stain his reputation because he is defenceless in this matter, and not in the position of Mr. Bates, who had the whole of the House of Commons to listen to him, and every opportunity for refuting the

shameful charges that were brought against him. That is the case of the *Columbus*.* I will give you another case. Mr. Plimsoll, early in the month of July, made a statement to the following effect:—

“In one instance a ship had been surveyed, and certain things were ordered to be done. The owner refused. The report of the surveyor was that ‘the ship, in her present condition, was utterly unfit to go to sea with human life on board;’ but it was sent to sea notwithstanding. The sailors found the ship so leaky that they went ashore at Deal or Sandwich, and the owner, who refused the repairs ordered, sent those men to gaol for 10 or 11 months. Another crew was put on board, the vessel went to sea, and *never was heard of afterwards*.”

A statement like that, made in a full House of Commons, produced considerable sensation. And no sooner was it uttered, and backed up with the assertion that 6,729 † lives had been lost at sea during the year ending June, 1874, than a murmur ran through the House, and members whispered, “Really this is too bad.” Shortly after Mr. Plimsoll had concluded I accosted him. I felt that so scandalous a case he represented demanded the fullest investigation by the Marine Department of the Board of Trade. He was sitting near the Sergeant-at-Arms, and in the hearing of the Sergeant-at-Arms I said, “Mr. Plimsoll, what is the name

* It is on a string of cases, each made more sensational, but each wholly unverified, that Mr. Plimsoll, in his celebrated book, hangs the following sublime string of anathemas against those who do not hold his views:—“I tell you, who read these lines, if you are a man, you deserve to perish suddenly, lacking sympathy and succour in your hour of utmost need, and leaving your nearest and dearest only the cold charity of the world to depend upon—for this is how sailors die—if you don’t help. If you are a wife, you deserve that your husband should be taken from you without warning, and that to the anguish and bereavement should be added the material miseries of hunger and destitution—for this is how sailors’ wives suffer—if you don’t help. If you are a father, descending, it may be, into the vale of years, with sons strong and brave, the pride and support of your age, you deserve that they should suddenly perish, with no hand to help them, leaving your remaining years uncherished by one filial greeting—for so the fathers of sailors are bereaved—if you do not help. If you are a mother, you deserve that your son should be taken from you in the pride of his young manhood, if you don’t help to stop this homicidal, this manslaughtering, this widow and orphan manufacturing system.” (P. 85, *Heliotype edition of Mr. Plimsoll’s Book*.) “Oh, for God’s sake help me to get a Royal Commission to inquire into the truth.”—(p. 54.) A Royal Commission was appointed, who examined any and every witness Mr. Plimsoll could suggest, and thereupon they remark, “the witnesses suggested to the Commission by Mr. Plimsoll did not much assist our investigation, and we lost valuable time in trying to elicit facts from the casual observations and unrecorded recollections relating to former events.”

† “Will you allow me to say a few words as to the passage in the *Times*’ leader of to-day, in which it is said that ‘5,000 seamen go to the bottom every year.’ Mr. Plimsoll puts the number at 6,927. The average number of all persons drowned at

of the ship to which you alluded?" His answer was, "I shan't tell you." (Laughter.) My reply was, "Then, I don't understand the principle upon which you make statements to the House of Commons which you are not prepared to substantiate." He said, "The statement was made to me in confidence, and I don't choose to give up my authority." I rejoined, "Mr. Plimsoll, I beg leave to say that I entirely disbelieve your statement." (Applause.) I immediately caused an official letter to be written to the magistrates at Deal, and the reply that came by return of post, as also the subsequent published correspondence between Mr. Knatchbull-Hugessen, the member for Sandwich, and Mr. Plimsoll, proved the story to be a fabrication—a scandalous fabrication. Mr. Plimsoll first tried prevarication, and then fell back upon the loss of the *Balaclava*; but although it was true that the *Balaclava* foundered, she had been surveyed and was heard of afterwards, for every man on board was saved. Such statements may be made in good faith, and by people who are acting under certain impulses which may be for good, but however good the motives of any man may be he has no right to do that which is bad, or say that which is untrue; and however pious he may be, if he does acts that are the reverse of right, and make statements that are false, he should suffer for them. I have given you three instances, which are quite enough to prove my case. I shall now say a word or two as to the way Mr. Plimsoll has slandered the permanent officials of the department to which I have the honour to belong. These permanent officials are three in number—Mr. Farrer, Mr. Gray (Assistant Marine Secretary), and Captain Digby-Murray. Having been closely associated with them for a year and a-half, I can say that three more able, more honourable, and more conscientious men do not exist upon earth. (Applause.) Mr. Farrer is well known for his learning

sea, taking the returns for five years ended December, 1872, is 2,425; and that number includes passengers as well as crews lost or missing from British ships all over the world. The number of all lives lost by casualties to British ships during the year ended June, 1874, is 4,416, including passengers, and including missing crews. It is thus 1,991 above the annual average. Of this excess of 1,991 lives lost in the year, I may mention that 821 and 420 respectively were lost in coolie ships abroad. Those two losses alone account for 1,241 of the 1,991 lives. And as regards the loss of 2,381 lives in 150 missing ships, I should like to point out that the 150 ships and the 2,381 missing men are included in the 4,416; and, also, that 69 of those 150 missing ships were known to have been classed ships. The remainder were not known to be classed, but many of them might have been. It is a fact that with the 150 missing ships there are also 2,381 missing men. Of these, 1,462 are missing in classed ships, and 919 in the others. The whole number of seamen's lives lost is 2,958, not 6,927. I make no remark on the causes of this deplorable loss of life, or as to the remedy that may be needed, but I trust you will allow me to publish through your columns a correct statement of the numbers."—*Mr. Gray's correction of the "Times" article.*

and his untiring industry, as well as for his great intellectual capacity, and his public conduct has been approved of not only by the present Government but by all the Governments under which he has served. Mr. Gray is known to many gentlemen in this room. He also is a most capital officer, untiring in his zeal, strictly honest in all his dealings, and thoroughly versed in the intricate business that he has to transact. The same may be said of Captain Murray. But what does Mr. Plimsoll state about these officials? First, I will cite a passage from the evidence of Mr. O'Dowd before the Royal Commission:—

“Did you have any conversation with the Board of Trade officials to whom Mr. Plimsoll refers in his evidence?—I did not introduce the name of any of the Board of Trade officials; in fact, I never saw Mr. Plimsoll before he came into my office and asked me to allow him to smoke a cigar, which of course I said he was quite welcome to do. He then paid me some compliments, and said that he had been anxious to make my acquaintance, and to get me to go and dine with him some day or other at the House of Commons. Mr. Hamel came in and I introduced him to Mr. Hamel. Mr. Plimsoll said to Mr. Hamel, ‘Do you know Tommy Gray?’ I knew very well whom he meant, but Mr. Hamel said ‘No; I do not know Tommy Gray.’ ‘What!’ said Mr. Plimsoll, ‘do not you know Tommy Gray, the Assistant Secretary of the Marine Department of the Board of Trade?’ ‘Oh,’ said Mr. Hamel, ‘I know Mr. Gray, the Assistant Secretary of the Marine Department of the Board of Trade.’ ‘So do I’ said he. (I would rather not give this evidence, but Mr. Plimsoll I think has opened it. I intended that anything that passed between Mr. Plimsoll and me should be strictly confidential, and I said so to him. I will never have confidential interviews with Mr. Plimsoll again.) Mr. Plimsoll said, ‘Before the present year is out I will crush that fellow; a greater rascal does not walk upon two legs.’”*

* This same spirit is manifest in Mr. Plimsoll's beautiful book of fictions, which has been sown broadcast by the thousand amongst the working-men. Amongst his appeals to the Majesty of the Working-man, to the Queen, and to Heaven, amongst his pious and prayerful ejaculations, selections from “*Toplady's beautiful hymns*,” and his references to “our Common Lord and Saviour,” we find the perversion we describe below.

It appears that Mr. Gray wound up a speech, at the Society of Arts, with these remarkable words:—“Let ships be lost and let cargoes be lost, so long as underwriters are too sordid or too lazy to refuse payment in doubtful or fraudulent cases: *but if the shipowner puts the country to expense, or causes or contributes to the death of a citizen, let him have justice without mercy.*” The whole point was, as the reader will see, in the part we have printed in italics. The italic part, however, is the only part ignored by Mr. Plimsoll and his followers, and they have ignored it both by word of mouth and in the public press, and to suit their purpose gave out, on the strength of that speech, that the Board of Trade is an advocate for the drowning of seamen and for shipwrecks and ship-knackers.

That is more than two years ago, and he has continuously laboured to keep his word, but without success. There are many other choice expressions of his that I could refer to, but it is quite sufficient to give you the main points. I will now refer to a correspondence that took place, a short time ago—on the 6th or 7th of August—when Mr. Plimsoll volunteered to lay convincing proof of his allegations before Sir Charles Adderley, but when challenged to do so he forebore to proceed. Mr. Plimsoll made a statement that the Board of Trade officials were, in point of fact, acting corruptly. He charged them (Mr. Farrer, Mr. Gray, and Captain Murray) with ignoring Acts of Parliament as much as they could, or provoking violent opposition to them, with a view to their repeal. When challenged by Sir Charles Adderley to substantiate these very grave statements he made no reply, and withdrew from the contest leaving calumnious assertions without any substantiation whatever, against officials in whom the Government and the public have confidence. These constant assertions of alleged facts, when they are repeated over and over again without such contradiction as, by your favour, I have been enabled to give to them, seize on the public mind, and lead people to believe things that are not true. (Applause.) There is another great evil—the attitude that the public press have taken in the matter. I have the greatest possible respect for the public press, as the public press know; but, unfortunately, they write sensational articles, and sometimes adopt sensational views, on different matters. They have done so in this case. With the exception of the *Nautical Magazine* and *Shipping Gazette*, I hardly remember having seen any magazine or newspaper that did not back up Mr. Plimsoll or conceal his defects. There is a singular instance in the *Daily Telegraph*, which was good enough to write an article upon the speech that I delivered here last Thursday; and although I gave the figures I used very clearly and convincingly, they have never acknowledged that they were right, but rather desire to fall back on the old statement that the loss of life at sea, instead of being what I gave you, was 5,000 or 6,000, or whatever the number may be that was erroneously given. I may here revert to a point that I forgot to state distinctly just now. When I spoke to Mr. Plimsoll about the imprisoned seamen at Deal, I asked him where he got the 6,927—the number of *seamen's* lives said to be lost at sea during

This is exactly as true as if Mr. Plimsoll and his friends were to assert that Portia advocated murder and bloodshed and the cutting up live Christians, when she said to the Jew Shylock:—

“Take thou thy bond, take thou thy pound of flesh;” for Mr. Plimsoll and his followers would omit the following lines:—

“But in the cutting it, if thou dost shed one drop of Christian blood thy lands and goods are, by the laws of Venice, confiscate unto the State of Venice.”

the year ending June, 1874, and which I knew to be erroneous; he said, "I got it out of the *Bristol Daily Post*." I replied, "I think you had better consult the Wreck Register, instead of going to a penny provincial newspaper to get your information." (Laughter.) This great leader of public opinion rejects the figures in the Wreck Register, which he, as a member of Parliament, has at his command, and adopts in lieu the figures of a provincial newspaper writer. This brings me back to the point how this 6,927 was arrived at. It was arrived at by the most extraordinary calculation. They added the total missing vessels, and then took these missing vessels as a separate item, and when the returns came out, in order to cut a great figure, and throw dust in the eyes of the public, they had put in the whole number of missing vessels twice over. (Laughter.) The attitude of the public press has been adverse to this question. I don't say it is not perfectly honest, or that all the things that have been written in sensational articles in favour of Mr. Plimsoll, and that all the things that have been said against the Government for their alleged neglect in not going on with their Bill, may not have been done with the best intentions, and in a perfectly straightforward manner—that I do not deny for a moment; but it is unfortunate that all this writing has been so persistently on one side.* It is my hope that we shall not see the same result in future. What is the remedy for all this as far as concerns ourselves? You who are present in this room are either shipowners or are interested, directly or indirectly, in ships. Your duty is to consult together. Remember that "Union is strength." It is your duty strictly to see that you have a care—as I am sure you must all have—for human life. But above all, during the present recess put your shoulders to the wheel, and endeavour to the best of your ability to bring the real facts of the subject before the country. I rejoice that this meeting has taken place, and is attended by friends from Liverpool, and also from Workington, Maryport, and elsewhere; and it will be a great satisfaction to me to forward the resolution in the mode that has been suggested by the Chairman. But I am not quite done yet. I will hardly call it a political point—for I consider that this Merchant Shipping question is outside the political arena, and ought never to have been made a political question, and it never was until the fag end of the session—but you will have heard it stated, on the highest authority, that the Government are about to bring in a comprehensive measure. Now, as I am not in the Cabinet,

* The *Bremen* arrived at San Francisco after a long voyage, in which the crew (negroes) had been attacked by scurvy. Thereupon a newspaper paragraph appears as follows:—In Mr. Plimsoll's various statements before the British Parliament, in behalf of the Seamen's Shipping Bill, he took occasion several times to call attention to the manner in which the ships of E. Bates, of Liverpool, were loaded, and the carelessness with which the wants of the seamen of the line were

and therefore do not know Cabinet secrets, I cannot answer the questions of my honourable friend, as I have not the slightest idea what that comprehensive measure will be. But I can tell you what it will not be. It will not be an embodiment of Mr. Plimsoll's proposals. You know that Mr. Plimsoll and his friends have been trading for a long time upon certain principles. There is the compulsory load-line,* compulsory survey, the testing of iron, and the prohibition of deck-loads.† I need not argue them with you, because you have already condemned them by your unanimous

looked after. He also made particular mention of one of their ships, the subject of this item, and stigmatised her as a "floating coffin." His statements have been verified to the letter by the vessel being reported at the Merchants' Exchange, early yesterday, as being anchored on the bar and in sore need of help, as all hands, with the exception of three men, were either dead or in such a fearful state from the ravages of the horrible disease as to be unable even to help themselves. She sailed from Liverpool on February 6th, and the first case of sickness was noticed on the 12th of February, and one after another was taken down with the disease, scurvy. It appears, however, that a greater portion of the crew were just off a long voyage, and were not ashore long enough to get freshened up for such a voyage as the present, and they undoubtedly had the seeds of the disease in their systems. Another serious trouble that the master experienced was, that although he had all the medicines, acids, &c., and fresh provisions in abundance, yet, according to his statement, he found it impossible to prevail on any of the crew to take anything for their recovery. Almost all the crew were negroes, and it is stated that "negro-like" they were so dreadfully superstitious that they absolutely refused everything, and one after another died from scurvy, with one exception—a white man, who died of consumption. Taken altogether, it is one of the most horrible cases of misery and suffering we have ever been called upon to chronicle, and will prove an unanswerable argument for Plimsoll to wield against the enemies of the poor unfortunates "who go down to the sea in ships."—So it appears whether the ship sinks, or is safe and swims, she is a "coffin ship" if she belongs to one of the gentlemen denounced by Mr. Plimsoll. There was certainly nothing the matter with this ship, and the crew would not take the remedies provided by Mr. Bates.

* As regards load-lines, Mr. Plimsoll in his book says—(p. 55, *Heliotype edition*)—"I would allow the shipowner to choose which he liked of all the scales, and load as deeply as any one of them would allow; I only want to prevent him from being a rule to himself. You (working men) see no special knowledge is needed here, and you who do not know a ship from a barque, or a brig from a schooner or brigantine, you are just as able to express an opinion, and better than that your *will* on this point." The Royal Commissioners in their report do not find the matter so easy they say the direct reverse. The present owner's load-line disc mark by which he is a "rule to himself," is called Mr. Plimsoll's "muffin," so absurdly and wrongly do people attach names.

† Mr. Bentinck has not referred to a proposal of Mr. Plimsoll to employ a Government staff of photographers, and so prevent any ships leaving port or dock after dark. Mr. Plimsoll advised the Government to let "no ship, under any circumstances, be allowed to leave port unless that (load) line be distinctly visible, at or above the water line; and let this fact be ascertained and communicated to the Board of Trade by a photograph of the vessel's side as she leaves the port or dock.

and strongly expressed opinion, but I think I may promise you this—that the compulsory load-line and compulsory survey, will never appear again in a Government measure. (Loud applause.) They were put in as amendments to the Bill of the Government, but Mr. Reed, who, in Mr. Plimsoll's absence was the leader upon that occasion, as I ventured to say before, ran away without firing a shot, and the thing quietly dropped. Deck-loads, as you know, were negatived by the Government, and the testing of iron was never argued at all. In my opinion, these four proposals, which comprised really Mr. Plimsoll's policy, never will appear again. It has been said by no less an authority than the *Times*, that two of Mr. Plimsoll's great projects or nostrums were carried. One was the provision for loading grain, and the other the load-line—the present system—embodied in the Bill. I hold in my hand a copy of Mr. Plimsoll's Bill, introduced by him on the 8th of February, 1875. Here it is (holding up the Bill), and I defy any gentleman here present, or anybody else, however intelligent, to find me one word in it about grain-loading or grain cargoes. The grain question was never a proposition of Mr. Plimsoll at all; it was an after-thought on his part introduced, as an amendment, into the Government Bill in the month of April; therefore, I maintain that he has no great credit in that matter. If you look at the grain clause that has been passed by the Government, you will find it to be no great injury to the shipowner, and that it does not meet any of Mr. Plimsoll's ideas, modified or otherwise, but maintains what has always been law—that the responsibility of stowing any cargo properly shall rest upon the owner; therefore it defines his responsibility more clearly, and I do not think that the British shipowner will find himself much damnified by that clause. The *Times* writer also gives credit to Mr. Plimsoll for defining the shipowners' load-line, or the obligation to mark the load-line on vessels, which rests upon shipowners by the present Act. That has nothing to do with Mr. Plimsoll; it is the reverse of what he ever asked. I have heard him myself denounce the voluntary load-line as a mockery, a delusion, and a snare; and he has compared it to giving power to the grocer to say how much tea he would sell for a pound. (Laughter.) This clause

It will not cost more than a few shillings, and would save a great deal of false-swearing afterwards." (P. 55, Mr. Plimsoll's "Remedies.") But the so-called "Plimsoll Act" does not contain this remedy.

Mr. Bentinck has not referred to two other of Mr. Plimsoll's remedies—one was that the name of a ship should not be altered—but Mr. Plimsoll suggested that remedy *after* the law *had* been passed whereby an owner cannot change the name of a ship without special license nor without advertisement.

Another remedy proposed by Mr. Plimsoll was, that in the case of ships, the shipowner should be limited in his insurance to two-thirds of the value. This has been forgotten.

has nothing whatever to do with Mr. Plimsoll's proposal ; it was originally suggested by Mr. Norwood. I myself considered it to be a proper one, and one that would add to the safety of ships ; and from first to last I urged upon Sir Charles Adderley, the propriety of including it in the Bill. I am glad that it is law, because it will answer all the clamour about the load-line that may arise in future. (Hear, hear.) I have shown you that the four Plimsollian proposals have virtually been negatived by the House of Commons, and I repeat my conviction that you will not find them in the Government Bill again. If I were to give advice to the Government—I should say, "In this matter be firm, be just. Do not put our subjects to a disadvantage with the foreigner." To use a familiar term, "You must not handicap the British merchant. Do all you can to save life, but do not anything unjust." We have now this stringent measure, whereby the Board of Trade surveyors at certain ports have the entire power of stopping ships without first appealing to the Board of Trade. Let us see how that acts during the winter. It is, in point of fact, an extension of the powers of 1873, and if the Government take my advice they will not condescend to dabble in details such as the law of marine insurance, or like matters, which have a very infinitesimal operation in the loss of human life at sea, according to the best of my belief. If the Government desire to devise any comprehensive measure, they will receive effectual assistance from the permanent officials of the Board of Trade. (Applause.) I dare say that you will have read that Mr. Gorst, the member for Chatham, last week made a most extraordinary speech, coming from a gentleman connected as he is with his party and the Government. He said that there was a quarrel, or difference of opinion, between the people of the country and the permanent officials of the Board of Trade as to the extent to which legislation on this subject should be carried, and that the quarrel was rather bitter, and of a personal character ; and he added that the Government had withdrawn the Board of Trade Bill, because of the great difficulty there would be in reconciling the opinions of the Board of Trade officials with the opinions of the people of the country by modifying the Bill. I give the most unqualified contradiction to that statement. There is no difference of opinion between the two. I am certain that the inclination of the opinions of the permanent officials of the Board of Trade is not so much in favour of the shipowners as might be expected—not so much, indeed, as I might have wished—because in the original Bill introduced by the President of the Board of Trade at the commencement of this last session there were some very stringent provisions as regards the liability of shipowners—making them responsible for the mere acts of their agents and servants, which provisions were certainly introduced by the officials of the Board of Trade, and which, being too

stringent in their operation, had to be dropped out of the Bill. In my humble judgment, the permanent officials of the Board of Trade have tried to hold, as evenly as they can, the balance between the shipowners, the sailors, and the public. There is, therefore, no foundation for the extraordinary statement of Mr. Gorst, and I am not surprised that he should have made it, because he is one of the numerous members of the House of Commons—notwithstanding the fact that he is a member of the learned profession—who meddled and muddled with this great shipping question during the last session. He thought fit to deliver a long speech on the second reading, or on one of the preliminary stages, of the Bill, and the only thing that he really demonstrated to the House was that he did not know the difference between a spar-deck and an awning-deck. (Laughter and applause.) In conclusion, I would say I do firmly hope and trust and believe that the Government will take proper action in this matter—that they will try to do what is right and just by all parties, and not be led away either by senseless clamour or idle cries, that have no foundation in truth. I shall have great pleasure, in accordance with your desire, in forwarding these resolutions to the Prime Minister, and I thank you very much indeed for giving me this opportunity of expressing to you my views, such as they are, and for the great patience with which you have listened to the observations that I have made. (Applause.) You know that it is always a great pleasure for me to meet with the shipowners and also the inhabitants of Whitehaven, especially when we stand on neutral ground, and when we are not tormented or threatened in any way by the demon of political controversy or political colour. (Applause.) I express my most sincere thanks for the confidence that you have been pleased to place in me, and which, I trust, you will find hereafter has not been undeserved. (Loud applause.)

Mr. HARGROVE moved, and the CHAIRMAN seconded, that a hearty vote of thanks be given to Mr. Bentinck for his valuable services, both as a member of the Government and as a member of the House of Commons.—The motion was carried, three cheers being given “upstanding” for the honourable gentleman.

SOUTH PACIFIC.—The largest island of the Caen group is in the centre; it is about 500 feet high in the middle, tapering down towards both ends. The northern island is flat all over, about 200 feet high, and covered with small verdant trees. The islands are five in number and well wooded from apex to base. Lat. $3^{\circ} 27' S.$, long $153^{\circ} 12' E.$

THE EXHIBITION OF NAVAL MODELS AT GREENWICH.

(Continued from page 668)

IN our August number we described the portion of the Exhibition which serves to picture the fleet of the past ; we now intend to notice some of the more remarkable of the illustrations of the present Royal Navy. The room appropriated to lock models of ironclads is the last in the circuit, and bears the name "Wager." One of the first models we notice, that of the *Erebus*, carries us back twenty years, to the beginning of ironclads. It is said that iron armour had been previously used on ships of war on some few occasions, one of which was at the siege of Gibraltar, but the first ironclad ships built and launched as ironclads were the French floating batteries, and the model of the *Erebus* represents one of our own floating batteries built in imitation of them. We notice that they were flat-bottomed, having been built with a view to an attack upon the Russian forts in the shallow waters of the Baltic. Two other vessels, the *Terror* and *Thunderbolt*, were built from the same lines but no use, was made of any of them, as the war was over before they were finished. The floating batteries were, as one can see by the model, very poor sea boats ; they were slow, and steered badly. It was not for a few years after the building of the *Erebus* that it began to be seen that sea-going war-ships could be designed to carry armour. The first ironclad worthy of the name was the famous *La Gloire*, built of wood, and plated with armour $4\frac{1}{2}$ inches thick. She was quickly followed by our own *Warrior* and *Black Prince*. Compare the half-model of the *Warrior* with the *Erebus*, and any one can see a great advance in shipbuilding ; there is a much greater difference between them than between any other two successive designs. The *Warrior* we notice compares favourably in appearance with the *crack* frigates ; she has a finely-formed bow, a graceful knee of head, and a smart-looking stern. However, as the designs subsequently developed in efficiency of armour and armament, they became increasingly ugly, and the *Warrior* is still, and is likely to be, the handsomest of our ironclads. The reason of this we shall see as we notice the progressive development of the ironclad navy. The *Warrior* has armour $4\frac{1}{2}$ inches thick, and wood backing 18 inches thick. Armour of this thickness was found to be proof against the largest service gun in use at that period, the old 68-pounder, and hence it was used in a large number of the earlier ironclads. She was only armour-plated amidships, the fine ends having merely the thin plates of an ordinary merchant ship ; and an armour bulkhead at each end of the central battery serves to complete the protected part of the ship, within

which are the magazines, engines, &c. The same plan was carried out in some smaller ironclads, of which one, the *Resistance*, is represented by a half-model. In that model we notice the ram-bow characteristic of most subsequent armoured war ships, and which, indeed, has become so important a feature that these ships are very often spoken of as "rams." There is a full-block model of a vessel, which is perhaps the best specimen of the *Warrior* class. The *Achilles* was built upon a design differing but little from that of the *Warrior*, the slight increase in size enabling her to carry a belt of armour fore-and-aft. Her dimensions are, length, 380 feet; breadth, 58 feet; and depth of hold 21 feet. She was designed to carry twenty-six guns, but this number was afterwards reduced to twenty, each weighing $6\frac{1}{2}$ tons. We give these particulars in order to compare her with the ironclads of a later date, which we shall notice are much shorter and have not such fine lines. There are, however, three longer ironclads than the *Achilles*, and in the collection at Kensington was included a very fine model of one of them, the *Northumberland*, on a half-inch scale, and fully rigged. This model being the property of the Millwall Ironworks and Shipbuilding Company (the builders of the ship), was not removed to Greenwich with the others, but is still to be seen at Kensington. The *Northumberland*, and her two sister ships, the *Agincourt* and *Minotaur*, are the longest vessels in the Royal Navy, and the largest afloat, with the exception of the *Dreadnought*. They had armour an inch thicker than that of the *Warrior*, but only 9, instead of 18, inches of teak backing behind the armour. The combined weight of armour and backing for a given area was the same in either case, and for some few years the respective merits of the two arrangements were the subject of much controversy.

As soon as the first ironclads were finished, it began to be understood that the days of wooden line-of-battle ships were numbered, and it appeared that to complete those which were then building would be merely a waste of money. There were five second-rates which had been commenced in 1860, all from the same design, and in the following year it was decided to take the upper deck off, and plate them with armour $4\frac{1}{2}$ inches thick. The model of the *Prince Consort*, one of the five, is a good specimen of the wood ironclads. Considering their makeshift character, they were very excellent ships, but the system of building wooden vessels to be armour-plated has been since entirely abandoned; the last such vessel was launched in 1865.

There are two other whole models of thinly-plated ironclads, representing the beginnings of the present broadside ironclad. The *Enterprise* is one the smallest armour-plated ships in the British Navy, and was designed as a specimen of a small vessel, under a thousand tons, and yet carrying armour of what was then the usual thickness. In her we

notice that a belt between wind and water is ironclad, but above that the armour is confined to a small central battery. The *Enterprise* only carried four guns, and the subsequent development of naval ordnance has so decreased the number of guns in even the largest ships, that the small central battery is still characteristic of the broadside ironclad. Another small wooden vessel, armour-plated, the *Pallas*, is represented in the Museum by a whole block model. As we have said, the kind of ship illustrated by these models is now out of date, and it is probably the case that most of them are so rotten, that they would not be worth repairing.

Upwards of twenty ironclads had armour $4\frac{1}{2}$ inches thick, but ordnance having being produced for the special purpose of penetrating them, it became necessary to build vessels with heavier armour. This was accomplished without any increase in the size of the ships which were indeed shorter than their predecessors, but by decreasing the area of the protected surface. In the *Bellerophon*, of which there is a full block model, the thickness of armour is 6 inches, and in successive ships it has been increased, till in some of the most recent sea-going broadside ironclads, the more important parts of the side are protected by 12-inch armour. We give the dimensions of the *Bellerophon* in order that it may be seen how, with thicker armour, she is yet much smaller than the *Achilles*. Her length is 800 feet, breadth 56 feet, depth $17\frac{1}{4}$ feet. The dimensions of the last broadside ironclad, the *Alexandra*, are, length, 325 feet; breadth, $68\frac{1}{4}$ feet; depth, $18\frac{1}{4}$ feet. It has been found better and more economical to build shorter ships, although greater power is required to drive them at the same speed. When it is considered necessary to have armour-plating for the whole length at the water-line, it is easily seen that as the armour increases in thickness, so it becomes necessary to decrease the length of the ship, even at the sacrifice of speed. An extreme case of this will be noted further on in the description of the model of a Russian ironclad. A short war ship also has the advantage of being easily manœuvred.

We notice that there are several models of turret-ships in the collection. There are two of the *Royal Sovereign*, built as a wooden line-of-battle ship, but altered to a turret-ship in 1862. At the same time was commenced the *Prince Albert*, of which there is also a full block model. She was built of iron, and by Messrs. Samuda. These two vessels were the first turret-ships built for the English Navy; they had four turrets each, three of the turrets carrying only one gun apiece. It has been since found the best arrangement to mount two guns in each turret, and that plan has been adopted in all the recent turret-vessels. The model of the *Wivern* is an illustration of the masted low freeboard turret-ship. She was one of two vessels built by Messrs. Laird, of Birken-

head, during the war in the United States, which it was believed were intended for the Confederate Government. To prevent international complications, our own Admiralty purchased them of the builders, and their names were then changed from *El Monassir* and *El Tousson* to *Wivern* and *Scorpion*. The model shows them as rigged with the tripod masts. After the loss of the *Captain*, the masts were taken out of them, it being considered that their small freeboard would be a source of danger when under sail. The *Monarch*, of which there is a full block model (a recent addition to the Museum), is a specimen of a sea-going masted turret-ship, with high freeboard; she was built to compete with the *Captain*. The low freeboard turret-ships now in the Navy are twin screws, and depend wholly on their engines. The *Glatton* is the only notable one of recent construction represented in the Museum; she is usually described as a monitor, and is intended only for purposes of coast defence. It may not be altogether out of place while noticing the low freeboard ships of the Royal Navy, to remark upon the difference in the conditions which should determine freeboard in merchant ships and in ironclads. It has been often remarked that if a vessel were built very strong, and had every aperture in the deck hermetically sealed, she, like a well-corked bottle, would live in the worst sea, however small her freeboard. The freeboard of merchant ships is, first, a question of strength; the lower the vessel is in the water the greater her load, and the strains consequent thereupon. Secondly, freeboard is also practically limited by the vessel's liability to have her deck swept by the seas, it being essential to the safety and comfort of the crew, as well as to the security of deck-fittings, boats, and coverings over hatchways, &c., that she should be generally free from this disadvantage. Low freeboard turret-ships, on the other hand, are designed so as not to be affected by the sea washing over their upper-deck. Ventilation is secured by shafts being run up to a considerable height above the deck, as may be seen in the model, where we also notice a promenade platform, which can be used when it is impracticable to walk on the upper-deck of the ship. The main question in considering the freeboard of ironclads is their stability when at extreme angles of inclination. The stability of a ship—that is, her tendency to right herself when inclined, usually goes on increasing as the angle of inclination increases, until the edge of the deck is under water, when it begins to decrease, and if the ship is still further inclined, decreases rapidly, and at last vanishes, the vessel then having as great a tendency to capsize as to return to her upright position. In the case of vessels of war, the position of the armour, guns, &c., so raises the centre of gravity that the stability in the upright position is less than is probably the case in most merchant ships. If some of our coast defence ships had masts and sails, partly

in consequence of this low initial stability, their inclination when under sail would bring them into a position where they would have but little stability, and then a sudden gust of wind would be enough to capsize them. The ultimate limit of the freeboard of a merchant ship would of course be her stability at probable angles of inclination; but the other conditions we have referred to, usually come in first, and thus, except in vessels of peculiar form, or in cases of bad stowage, stability has little to do with freeboard.

We have referred to the reasons which led to the decrease in the lengths of our ironclads as they were more heavily armoured, it being considered cheaper to drive them through the water by more powerful engines, than to have the heavily armoured fine ends, otherwise necessary. We also referred to the advantage of short ships for manœuvring. Taking the proportion in several cases already mentioned, we find that the *Warrior* has 6·5 breadths in length, *Northumberland* 6·7, *Monarch* 5·7, *Bellerophon* 5·3, *Glatton* and *Devastation* 4·5. This gradual contraction of length led to the idea that the ultimate form of coast defence ironclads, as the thickness of armour continued to increase, would be one in which the length and breadth would be equal, either a square with the corners taken off, or a circle. In England we have not come to this, but have, in the last design for a mastless turret-ship, a central and nearly square armoured fortress, made ship-shape by the addition of unarmoured ends, such being, in fact, the design of the *Inflexible* now building at Portsmouth. The Russians, on the other hand, have carried into practice the idea of a circular ironclad, and there is a model of one of these famous ships on view in the Museum. The *Popoff-ka-Nongorod* is represented by a half-block model; she is 101 feet in diameter, and $12\frac{1}{2}$ feet draught of water. A fixed turret occupies the centre of the vessel, having in it two 11-inch guns, weighing twenty-six tons each. There is a forecastle in front of the turret and of the same height, it being intended that the guns shall fire over the forecastle. Aft the turret, there are engines on each side of the ship for driving the screw-propellers, of which there are no less than six. The armour is stated as equivalent to $12\frac{1}{4}$ inches, of which, however, the solid plate is only 9 inches thick. The *Popoffkas* suggest rather the idea of a fort than a ship, and they are in fact little more than floating forts. Various accounts have been given of their speed, some saying that they are unable to make headway against the tide, the most favourable stating it at eight knots (?), which, though more than might have been expected from a ship of a form so difficult to drive through the water, is so small as to place them at a great disadvantage in comparison with ordinary vessels of war. The lowest speed of any of our own monitors is 9·6 knots, the *Devastation* goes 12·5.

Having noticed the block models of ironclads, the structural models in one of the up-stairs rooms which we passed over, may, with advantage, be revisited. It will be seen on examining them, that the framework of our ironclads has developed concurrently with their capability of resistance to shot. There is a large sectional model of the *Warrior* which we will notice first. That remarkable ship, it has often been said, reflected the greatest credit upon her designers, not only as being the first thoroughly satisfactory sea-going ironclad, but also from the novelty and efficiency of her structure. The system of framing adopted in her case has been, it is true, much improved upon since; but, its main features have been preserved throughout, not only in English but in most foreign ironclads. We notice in the model that there are two distinct and different portions of the structure, the one above and the other below the armour-shelf. In ordinary merchant vessels the frames are transverse, longitudinal strength being provided for in the skin-plating, keels, deck-stringers, &c. The great weight of the armour and guns in an ironclad necessitates some arrangement which shall give greater longitudinal strength, and the plan adopted for that purpose is shown in the model before us. There are five longitudinal plate-frames on each side, which with the two armour-shelf plates and the centre vertical keel-plate, make thirteen fore-and-aft frames in all, each being connected to the skin-plating by angle irons on each side. Short transverse frame-plates are fitted between the longitudinals and continuous transverse angle irons are placed inside the frames, and are continued beyond the armour-shelf, and connected to the frames behind the armour. There is an inner skin in the lower part of the ship, and the space between it and the outer skin is by the longitudinal and other frames, divided into a large number of compartments, thus reducing the danger likely to result from injury to the outer bottom plating. Behind the armour, the ship's side is made up of vertical frames consisting of plates and angle irons, upon the outside of which is worked a thin iron skin, and then two layers of teak backing, one fore-and-aft, the other up-and-down. If we notice, now, the structural model of the *Bellerophon* we shall see some important modifications. The transverse plate-frames in the *Warrior*, we notice, are lightened by having large holes in them near the centre; in the *Bellerophon*, for the transverse plate-frame is substituted bracket-plates, somewhat of the shape of the letter E, with the angles filled in. Two bracket-plates are so arranged as to take the place of a transverse frame, being much lighter while practically as strong as the transverse frame. The bracket plate-frame has been used in all the more recent ironclads. We notice, also, a difference in the backing of the *Bellerophon* from that of the *Warrior*. The latter is entirely wood; in the former there are large angle-irons rivetted to the

skin, and running fore-and-aft, having the wood backing fitted between them. It was found that the effect of this composite backing, was to distribute the effect of the shot over a larger area. In the structural model of the *Hercules*, we notice the idea of mixed backing is still further developed, there being, first, the armour-frames, then a thin iron skin rivetted to them, then two layers of wood backing, outside which there is a second series of armour frames, then a thick iron skin, outside which there is the composite backing as in the *Bellerophon*; and, lastly, the armour-plates. There are structural models of other iron-clads, notably one of the *Devastation*. It is very difficult to describe their peculiarities, and we hope our readers will pardon our rather free, although unavoidable, use of technicalities in attempting to do so. Our desire has been to point out the more remarkable features of the several structural models, and to show the steps by which the present system of ironclad construction has developed. We may add that in the *Inflexible*, now building, the thickness of armour is two feet; it is probable that the utmost limit has been reached. In this division, we notice, that the interest of visitors is very much excited by some shavings of armour-plates, taken off by a powerful planing machine. There are also interesting models of armour-plate bolts, &c., which we have not space to remark upon.

There are a few remarkable models of modern ships, other than iron-clads, which are, we think, worthy of a brief notice. A good specimen of modelling work, as well as an illustration of a very handsome ship, is the model of the royal yacht *Victoria and Albert*. The other yachts are also of considerable interest. There is a model of the first of a class of vessels, which now occupy a most important position in the Navy, we refer to the *Staunch*, as illustrative of the present gunboats. With some propriety the numerous vessels of this class are spoken of as floating gun carriages, each of them carrying but one large gun. The special feature of them is that the gun stands upon a platform, which can be lowered into a well beneath, so that in rough weather the weight, which would otherwise be a source of danger, is safely stowed away in the hold, and then, when wanted, is again raised to its working position. The "floating gun-carriages" now constitute the "small fry" of the Navy; they are very small and comparatively inexpensive, and yet one of them would be a formidable adversary to any unarmoured vessel, and even to some of the thinly-plated ironclads.

We have not space to notice the many interesting models of masts, yards, boats, ports, and general fittings of ships, nor those of inventions, among which, as is usually the case, there are a hundred failures for one success. We can promise our readers that they will find much to interest them in the parts of the exhibition which we have not had space

to notice here. We were informed on the occasion of our visit, two months ago, that the largest number of visitors in one day had been less than 600, but then the Museum had only been open to the public since October, 1874. We have no doubt that as it becomes better known it will be better appreciated, and that the Admiralty will be thus encouraged and stimulated to complete the original design.

NOTES UPON THE DEPARTMENT OF CHARENTE INFÉRIEURE IN FRANCE.

BY THE HON. H. PRENDERGAST VEREKER, LL.D., F.R.G.S.

THE Charente Inférieure, formed of the provinces of Saintonge and Aunis, is one of the most interesting portions of France, especially to Englishmen. In ancient times it was occupied by a Celtic race, which, judging from their remaining memorials must have been very similar to the Celts of these islands, not only in habits and character, but in what is a fair criterion of identity of race, their religious, or rather idolatrous rites. For we find throughout the district many cromlechs, or, as they are there called dolmens, consisting, as in Ireland of three large upright stones, supporting a heavy horizontal rock, and, so far as we can judge, intended for purposes of sacrifice. Nothing resembling our Stonehenge has been discovered; but there is one large monument at Montguyon, consisting of two parallel rows of rocks supporting transverse stones above, which may have served somewhat similar objects to Stonehenge, for as we find that astronomical conditions were followed in the construction of the latter, so at Montguyon, the rocks are so placed that at midsummer, but at no other time, the sun's rays strike through the gallery, a flat stone fixed at its extremity. Such conditions are scarcely attributable to mere accident, but seem rather to imply that the Celts, like the Egyptians, were not deficient in a search after astronomical knowledge. These Druidical remains are usually to be found in the most retired parts of the country. The mysterious rites may, therefore, have been carried on in secret, but whether this were so or not, the Druids must have exercised unbounded control over the people in their day, the enormous stones of which their monster temples were composed having to be moved considerable distances, probably by manual labour alone, and showing, occasionally, signs of elaborate preparation.

In the century preceding the birth of Christ, the Romans invaded the country of the Santoni, and at Mediolanum Santonum, the site of the present town of Saintes, they established their head-quarters. The monuments of their occupation which remain are numerous and interesting; in its associations the chief is the Arc de Triomphe, erected at Saintes in honour of Germanicus Cæsar, son of Drusus, who, with his brother, the Emperor Tiberius, had been adopted by Augustus Cæsar. It was erected, as evidenced by the inscription there on, in the 4th and 5th Consulates of Tiberius—that is to say, from the years 21 to 31 A.D. It was at first erected as an entrance to the town, and a military road passed under it; subsequently the River Charente was brought to that point, and a bridge was formed on both sides of the Arch, which thus became its centre. At a later date, another bridge was made near, and the Triumphal Arch was removed to the adjoining land, where it now remains, erected in an unsuitable position, but retaining its ancient form and the original stones and inscriptions.

The Arena and Amphitheatre, the Aqueduct, and many other interesting Roman constructions, though in ruins, still exist at Saintes. The Arena is one of the largest known, and has lately been, in the greater part, excavated under the auspices of a Commission appointed for the preservation of ancient monuments.

In 1151, the Charente Inférieure, then forming part of the Duchy of Aquitaine, became attached to the English Crown by the marriage of our Henry II. with Alianore, co-heiress of Aquitaine, and previously wife of Louis VII. of France, and the title of Duke of Aquitaine was then taken up by the Kings of England, and continued until the reign of Edward III., who exchanged it for the more ambitious designation of King of France. It was under the rule of the Queen Alianore, now mentioned, that was framed the celebrated code known as the Rolls of Oléron, which became for many ages the guide to maritime nations.

The possession of Aquitaine was by no means a sinecure to the English, and gave rise to a succession of civil broils and international struggles, lasting for centuries. In these wars Henry II., Richard Cœur de Lion, and King John, took active parts. Saintes, Taillebourg, and Tonnay Charente, were principal scenes of these contests. The Chateau of Taillebourg deserves a passing word; the ancient battlements of which still remain. It was situated on a high mound of rock, three sides of which are almost perpendicular, and the difficulties of nature have been added to by art. It has the appearance of a place which, in an age when Armstrong and Krupp guns were not dreamt of, or fire-arms known, must have been all but impregnable; it is, therefore, not surprising that the possession of this point was a main object of contention in what may be styled the Anglo-Norman age of the Saintonge.

The wars of religion in the 16th and commencement of the 17th centuries were perhaps in no part of the world carried on with greater determination than in the provinces of Saintonge and Aunis. La Rochelle, the present chief town of the Department, became the main centre of Protestantism ; it was there that Henri IV. was brought by his mother Jane d'Albert, of Navarre, and, when only sixteen, was declared Defender and Leader of the Protestants. It is a notable fact, that notwithstanding the severest persecutions, the massacre of St. Bartholomew, the revocation of the Edict of Nantes, and every effort to crush the development of their mental faculties, Protestantism in the Charente Inférieure not only held its own, but has augmented its converts ; and at this moment there are some parts of the district, such as La Tremblade and its neighbourhood, where Protestants are actually in a majority of the population.

Christianity must have penetrated at a very early period indeed into Saintonge, for it is on record that Eutrope was named Bishop of Saintes in 95 A.D., and he must have been a man of note, having many in his flock, for he was afterwards canonized, and to this day is regarded with veneration by the natives.

In our own days, the Charente Inférieure has maintained its historical interest ; it is from thence that Napoleon the Great surrendered to the English. The stone at Touras, where he last set foot on the French Continent, and likewise that on the Isle d'Aix, from which he stepped on board the boat of the *Bellerophon*, which was to convey him to life-long exile, are religiously preserved. It was the department of Charente Inférieure which almost unanimously elected the late Emperor, Prince Louis Napoléon Bonaparte, when he was a candidate for the National Assembly, and although he was elected by various other constituencies he chose to represent the Charente Inférieure, and thus commenced that reign which, though vilified by contemporaries, history will recognise as glorious, and beneficial to France.

Viewing the energy, industry, and firmness of purpose of the inhabitants of the Charente Inférieure, it can scarcely be doubted that in future, as in past ages, they will make their mark on the politics of the time ; and such names in our own day as Chasseloup-Laubat, Boupland, Regnault de Saint Jean d'Angely, and Dufaure, testify that they are doing so at the present.

I would now say a few words on the geographical configuration of the land and its more prominent geological conditions. Taking first, the coast line, it is clear that even within the historical period it has undergone very remarkable transformation. Ptolemy speaks of the *Portum* and *Promontorium Santonum* (Santoni being the name given to the ancient inhabitants of the district), and he manifestly alludes to the principal port of the country, and to a promontory extending therefrom ; but as

examining the modern coast no such port, and no such promontory is found. It could not be La Rochelle, which was not in the district of Saintonge, but to the northwards, and, so far as we can discover, was in those days a rocky island, without port or promontory. Nor could it be Rochefort or Tournay Charente, then unknown, much less Bordeaux, to which the description could not apply; yet I am convinced Ptolemy was right, and that the promontory to which he referred was the island of Oléron, now divided from the mainland by a branch of the sea, but formerly connected, as the remains of a Roman military road leading thereto from Mediolanum Santonum have been traced, and the port mentioned was probably to the north of that promontory, forming the embouchure of the River Charente to the south of its present exit. I am confirmed in this theory by observations of the changes almost daily occurring in the bed of the River Charente, which has changed some yards in various points within my own recollection, and marks are found at considerable distances from its banks, proving that in ancient times its channel was quite different from what it is now. The lands where I suppose the port spoken of by Ptolemy to have been situate are now composed of deep alluvial deposit, and there is abundant evidence in the higher grounds that the sea had reached so far. Even at four miles distance from the present coast is a tower, the Tour de Bron, the base of which bears evidence of the action of the waves, and at some height from the ground there are the remains of rings fixed in the walls, and of the wear apparently caused by boats attached thereto.

A consideration of the topographical conditions of the Charente Inférieure brings the mind to the irresistible conviction that the greater part of the department, now one of the most populous and wealthy in France, is of comparatively recent formation, the existence of extensive tracts dating from within the historical era. We know from records that branches of the sea reached to Niort, Aigrefeuille, and various other points, which now range from a short distance to many miles from the coast; and we see in the large alluvial plains, which constitute the greater portion of the department, unmistakeable indications that the sea had command over those districts at a period not extremely remote in the world's history, for we trace the action of the sea in various inland places, such as St. Aignaut, Marennnes, Charron, the Isle d'Albe, &c., which have the appearance of having been formerly islands. We further find in the deposits, shells of species still existing, and we may therefore be justified in concluding that those rich plains, portions of which were, even in the memory of man, unprofitable marshes, have been formed by causes similar to those which in this day we find operating on other parts of the coast and modifying its contour.

Two examples will be sufficient to show what, and how powerful, are those causes. In the River Sèvres Niortaise, formerly a branch of the sea, there is such an accumulation of mud that vessels at the port of Maraus, when the tide is out, remain fixed in the mud as though they could never be extricated ; but when the tides rises, and the mud is softened, they spring up with a noise like an explosion—to become prisoners again on the next low tide. Yet this mud, now looked upon as an inconvenient obstacle, in the lapse of ages formed those great and fertile plains, from and around Maraus to the sea, which at this day are famed for the quantities of beans, peas, potatoes, and such like, produced therefrom.

The other example which I would mention, drawing on the present to judge of the past, is the Dimes, or Sand Hills, which now exist in their integrity mainly in the neighbourhood of La Tremblade. They are composed of fine white sand, subject to the action of the wind. It is a legend in that locality that when the inhabitants found the sand-hills moving, or, as they expressed it, “ the mountains marching,” they fled in terror from their homes, fearing to be engulfed. I can understand the idea, for I have seen villages in South America destroyed by sand, the inhabitants being wanting either in skill or means to stop its approach ; even at Rio Grande de Sul, an important port, the sand is only kept back by a strong bulwark and mound. But on this coast of France, a series of regulations were established from an early age to check its advancement, the proprietors of adjoining lands being required to plant the sand-hills under pain of forfeiture, and when they did not do so, the Government planted and claimed the lands. This measure accounts in a great degree for the check imposed on the invasions of the sands. The trees planted are usually stone-pine, and they prove valuable in producing wood and turpentine, and specially by consolidating the sands. I am sure, from having seen the experiment tried on very similar sands in America, that all those sand-hills, yielding on the average little profit, might, by a proper course of top-dressing, become usefully available for ordinary cultivation.

I am particular in referring to those sand-hills, for manifestly similar agencies have exercised in former times considerable influence in the formation of the district under review. If we probe beneath the soil, at almost every point is found at more or less depth a layer of new sandstone possessing the peculiarities of the sands in question, supposing them to be consolidated and petrified. At St. Savinien, where the quarries extend for miles underground, and at various other places, this sandstone, similar in quality, reaches the surface ; the stone is valuable for building as it can be got out in blocks of almost any size and is easily sawn and carved but acquires strength and resistance by exposure to the air. It is now exported for building purposes to Belgium and the North of France.

I have also caused some to be introduced in England. It resembles Bath stone but is finer in grain; it is of this stone that almost the whole of the ancient churches in the Charente Inférieure have been built, and they are celebrated for their elaborate workmanship; the conclusion to be drawn from the extraordinary prevalence of such sandstone is that at some remote period this now fertile country must have been covered with sands similar to those which are now found on the coast, though volcanic and other agencies may have intervened to establish the present conditions.

Throughout no small portion of the older lands there is the following peculiarity, of which I merely give average results; first comes the upper alluvial or silicious surface from a few inches to some feet in thickness; next a stratum of sandstone and consolidated marl 3 to 12 feet deep, usually broken and friable, occasionally more solidified or in slabs like limestone; below this again is found for 6 to 12 feet an unstony soil, manifestly formed from vegetable mould and resembling peat, though browner. When this soil is exposed to the oxygen of the air it produces abundance of sallies and such like plants, thus implying that at one period those lands were occupied by marshy trees and plants and must have so continued for an immense time. Below these strata is sandstone rock varying in structure and hardness from the later formations to those which have been subject to volcanic or electrical influences. The inhabitants have wisely profited from this natural distribution and they penetrate through the first layer of sandstone, employing it for road making or building, and bring up the soil from below which they call the virgin ground, and from which the most luxuriant crops may be produced for many years without any necessity of artificial enrichment.

I should not omit the gratifying fact that during the prolonged occupation by the English of the part of France referred to and the many wars in which they were engaged therein, they have left behind them none but honourable reminiscences; the principal monuments which to this day are looked up to with greatest pride were the work of Englishmen, such is St. Sauveur and the Beacon at La Rochelle, such many of the churches and ancient edifices, some maintained, some in ruins, but all deserving a visit. During eleven years residence in the Lower Charente, I have found no remains of former animosities but rather a sense of respect for the Anglican race, reputed by the legends of the country to have been intellectually and physically superior to the natives whom they supplanted.

Those ancient and prolonged wars have been succeeded by other contests not less determined and earnest, but immensely more beneficial to humanity: the rivalry of commerce, of education, of intellectual development, of industrial occupation, of political freedom: in these honourable contentions the inhabitants of the Charente Inférieure have borne a distinguished part. The habits of order which, commencing

with the higher authorities, are found engrained throughout the population: the cleanliness which seems a principle of their nature: and sobriety, which is so well supported that drunkenness has come to be looked upon as one of the worst, as it is with the inhabitants one of the rarest of crimes: all these are subjects deserving admiration. But the eyes of England are at this moment rather turned to the Charente Inférieure in consequence of the astonishing development in the late years of its commerce with the United Kingdom and of the large revenue the Exchequer derives therefrom.

The commerce of the Charente Inférieure may be considered essentially British; it is of the simplest character consisting virtually of the import of coals and the export of brandies; it is conducted in a very quiet manner under perfect organization, and, whilst enriching the producers, contributes largely to the public revenues of both England and France. Tonnay Charente, the nearest port to Cognac, is the main outlet of the trade in brandy, which since 1840 has progressed enormously, the value of this one article of export having about doubled in each ten years since the date mentioned and now exceeding £3,500,000 sterling per annum. The most remarkable increase has taken place from 1864 to 1874, during which period I had the honour of holding Her Majesty's commission as Consul for the Charente Inférieure, the tonnage of British ships at the Port of Tonnay Charente alone having augmented in that time from 26,000 to 56,000 tons, the value of imported goods from £40,000 to £125,000, and of exports from £1,000,000 to £4,000,000. It is gratifying to have had a part in promoting so valuable a trade and more so to understand that it is now considered so firmly established as to admit of the abolition of the British Consulate at Charente.

MR. ADAMS ON SAFETY-VALVES.—We very much regret that, owing to lateness in receiving the manuscript and blocks of Mr. Adams's second article, it cannot appear this month. It is, however, satisfactory to all parties concerned to know that the valve of Mr. Adams, which has practically no accumulation, is finding universal favour. The advantage it possesses is, that it saves all squabbling between the owners and the Board of Trade, as to the amount of reduction of pressure to be made when there is an accumulation. In the case of some other valves, this accumulation over fixed pressure has (our correspondent inform us) been high and led to great trouble.

THE LITERATURE OF FREEBOARD.

THE Merchant Shipping Act of 1875 provides for the marking of a load-line upon every British ship, upon her being entered outwards from any port in the United Kingdom, such load-line to be an expression of the owner's intention as to the loading of his ship for the voyage out and home. Such being the case, there can be no doubt that as this part of the Act is to come into operation on the 1st of November, the attention of shipowners will, during the present month, be largely directed to the various rules of freeboard which have been placed before the public during the last few years. We have in former articles discussed the pretensions of some of these rules to be a settlement of the whole question, and have, we believe, shown that the adoption of any one as a compulsory rule of freeboard, or indeed as the basis of an officially marked load-line, would cause more evils than it would cure. We propose in the present article to review them from a new standpoint, to discuss their relative values as affording assistance to the shipowner in determining his own load-line. Their fitness for this purpose will depend upon their more or less extensive and accurate generalisation of the experience of the past. Have the originators of the rules had at their command enough practical experience? Have they rightly interpreted its teaching?

In order to a better comparison of the several rules of freeboard which have been before the public, we propose to express them in algebraical formulæ, in the following notation:—

L & B, the length and breadth for identification, as shown on the register (in feet).

D, the depth of hold to the main upper-deck (in feet).

T, the register tonnage to the main upper-deck.

F, the freeboard, in inches.

f, inches of freeboard to the foot depth of hold.

All the formulæ which we shall give were got out for this Magazine, although some of them have previously appeared in print. They were shown to Mr. F. W. Wymer some little time ago, and the publication of this article having been delayed from press of other matter, he has been the first to make them public in connection with some remarks on his own rule of freeboard.

We propose to classify the rules, taking first those in which depth of hold only is considered; second, those in which other linear dimensions are introduced; and, third, those in which the volume of the ship affects the result.

Of the rules depending only upon depth of hold, the old Lloyd's rule, now quite obsolete, stands thus:—

$$f = 8, \text{ or } F = 8 D,$$

$$\text{and for spar-decked ships, } f = \frac{8}{2} \text{ or } F = \frac{8 D}{2}$$

The old rule of the Surveyors to the Liverpool Underwriters' Association, varied somewhat irregularly between 2·25 inches to the foot depth of hold at 10 feet, and 4 inches at 26 feet. It was reduced to a regular scale, and made public by the Association in 1867, when it took the form:—

$$f = \frac{12 + D}{10} \text{ or } F = \frac{(12 + D) D}{10}$$

This table was again issued in 1869, when the scale of 1867 was confined to wooden ships, and a modified scale was added for iron vessels. The latter may be thus formulated:—

$$F = \frac{D^2}{100} + \cdot 75$$

Of the rules introducing other linear dimensions than depth, the first important one was that proposed by the Council of the Institution of Naval Architects in 1867. For ships of not more than five breadths in length the formula is—

$$F = \frac{B}{8}$$

Over five breadths in length—

$$F = \frac{B}{8} + \left(\frac{L}{B} - 8 \right) \frac{B}{82} \text{ or } \frac{1}{8} \left(\frac{L}{4} - B \right)$$

F, in this case, being the freeboard in feet.

This rule would hardly appear to have been put forward as a complete settlement of the question, and is of little or no practical value. The chief consideration taken into account is stability at large angles of inclination, which, as we have more than once shown in these pages, although of extreme importance, should not affect the figures of any freeboard rule.

Another rule of linear dimensions is that of Mr. Duncan. His general formula is—

$$F = A (L + B + D)$$

the multiplier A varying thus:—

a. For first-class sailing vessels A is ·2.

- b. For second-class sailing vessels A is $\cdot 25$.
- c. For all other seaworthy sailing vessels A is $\cdot 8$.
- d. For steamers carrying cargo only, the multiplier is in each case $\cdot 05$ less than the corresponding sailing ship multiplier.
- e. For passenger steamers as in sailing ships.
- d. For steamers of three decks the multiplier is $\cdot 2$, $\cdot 25$, or $\cdot 3$, as they carry cargo to the upper-deck, passengers under the upper-deck, and passengers in two decks. Spar and awning-decked vessels to have the multiplier for the class next below what an ordinary three-decked ship would have, with a minimum freeboard of 7 feet.

Mr. Duncan's rule probably embodies his own experience of ships, but in such a form, that as soon as we get out of a certain class, the results are very unsatisfactory. Its chief value is, that he has been the first to propose any figures as to the increase of freeboard for the lower classes in the registries. If ships could be divided into three distinct classes, the higher including the best ships in the registries, the lower ships which can only be said to be just seaworthy, his experience leads him to propose that the latter should have half as much more freeboard as the former, and that for an intermediate class there should be an intermediate ratio. Other writers, although sufficiently exact upon the freeboard of first-class ships, and although expressly stipulating that their rules only apply to first-class ships, leave the whole question of the modification necessary in applying it to others to the judgment of the surveyor. Mr. Rundell, in his proposed freeboard tables of this year, has, like Mr. Duncan, reduced this point to figures, and it may be somewhat instructive to notice the difference in their figures. Mr. Rundell's rule, as we shall describe farther on, depends upon cubic content, a varying percentage of the total volume of the ship being required to be above the water as spare buoyancy. The medium percentage is 28, and the increase upon this demanded for a third-class ship as compared with a first, of exactly the same dimensions, is four per cent., that is an increase of one-seventh. Mr. Duncan, as we have seen, requires by his rule an increase of one-half.

This is really the most important question in connection with the whole subject of freeboard, only two of the many writers upon the question have given any figures at all, and the two authorities differ by as much as the difference between a half and a seventh.

In the third place, we come to rules of freeboard which take in the volume of the ship. The first rule depending upon volume was promulgated by Mr. Moorsom, the late Surveyor-General for Tonnage, not with a view to restricting the freeboard of ships, but to enable anyone to estimate the dead weight capacity of any ship from the under-deck register tonnage. He collected data from a number of firms, and, as the

result of his enquiries at that time (nearly twenty years ago), framed the rule that (expressing the dead weight capacity by W) generally

$$\text{For sea-going ships, } W = \frac{8 T}{2};$$

$$\text{For coasters, } W = \frac{88 T}{20};$$

$$\text{For very long voyages, } D = \frac{27 T}{20}.$$

Mr. Rundell stated in 1870 that Mr. J. Jordan, a surveyor to the Liverpool Underwriters' Registry, had observed that the usual practice as to the loading of ships gave about thirty per cent. of the buoyancy above water. He then proposed that a round spot should be marked on every vessel at a place where twenty-five per cent. of the under-deck register tonnage would be cut off, not as indicating the point of maximum immersion, but as being a guide to those who should have to settle that point.

The next rule we notice with reference to freeboard of volume is that of Herr Mitzlaf, of Elbingen, communicated to the Institution of Naval Architects in 1872. He proposed that for European voyages $\cdot 24$ of the under-deck tonnage should be above water; for Transatlantic voyages, $\cdot 278$; and for longer voyages, $\cdot 307$. This was to hold good for vessels where L was less than $5 B$, above that it was to be increased until, when L was over $8 B$, the ratios would be increased by one-fourth. The percentage was to be estimated pretty closely by means of the tonnage measurements. A more exact way of finding the line at which any given percentage of the register tonnage is cut off was given in our number for May, 1874, to which we would refer our readers, as, we believe, favourably comparing with other proposed methods for doing the same thing.

We now come to the consideration of some rules which have been proposed for determining a freeboard of volume by means of the relation of the registered dimensions to the registered tonnage. There are three of these schemes, proposed respectively by Mr. Martell, of Lloyds; Mr. Rundell, of the Liverpool Registry; and Mr. F. W. Wymer. They alike depend upon an assumed relation between the registered dimensions and the registered tonnage. The idea expressed in two of them, and implied in the third, is, that the measure of the fineness of the ship may be thus obtained, C being the co-efficient of fineness:—

$$C = \frac{100 T}{L \times B \times D}.$$

We have in former articles* gone into this question at some length, and have, as we believe, shown that the co-efficient so obtained is of little

* *Nautical Magazine*, December, 1873, and June and November, 1874.

value. If L , B , and D were length, breadth, and depth of the volume T , the case would be much improved, though even then methods depending upon co-efficients of fineness, or upon general relations of dimensions to volume, could not be depended upon to give a practically accurate freeboard of volume. As it is, the case stands thus with regard to the real significance of T , L , B , and D :— T is the inside volume, not to the main-deck, but (in case the ship has more than one deck) to the second deck from below, which may be a deck above or below the main upper-deck of the ship. D is the depth of hold to that deck, but L is the length of the ship from the fore side of stem to after side of stern post, and B is the extreme breadth outside. In a large number of ships there may be the same relation between L , B , and D , and the length, breadth, and depth of the volume T , but to assume that the relation is the same for all would lead to great error. However, we proceed to the rules, at the same time cautioning our readers that, with a great show of accuracy, they are most inaccurate.

Mr. Martell's rule occupies many pages of figures; it may, however, be reduced in the tables for iron steamers to the formula

$$f = \frac{80}{52-D} + \cdot 3 - \frac{(D-5)(50-D)(3-4c)}{500}$$

It will be observed that the last fraction gives the influence due to fineness, and when c equals $\cdot 75$ the formula becomes

$$f = \frac{80}{52-D} + \cdot 3$$

and when c is more than $\cdot 75$, the sign of the last fraction is *minus*.

We thus notice that freeboard depends upon two quantities—depth of hold and fineness. This holds good for ships of moderate dimensions, in which the length does not exceed eight times the breadth. From eight to ten breadths in length the freeboard is increased by a percentage of itself thus determined—

$$4 \left(\frac{L}{B} - 8 \right) + 2 \text{ or } \frac{4L}{B} - 80.$$

The freeboard of steamers is, by Mr. Martell's rule, decreased for spar-decks and deck erections by the use of fractional multipliers as follows:—

Spar-decks of light construction	...	...	$\frac{1}{4}$
Awning-decks	...	...	$\frac{1}{16}$
Long poops	...	...	$\frac{1}{4}$
Short poops or long raised quarter-decks	...	...	$\frac{1}{16}$

A sheer is assumed of $1\frac{1}{2}$ feet to 100; when there is more than this, the sum of the excesses at the ends of the vessel to be divided by 12, the

quotient to be deducted from the freeboard. Similarly, deficient round of beam is to increase the freeboard.

For iron sailing vessels the following formula gives the freeboard of Mr. Martell's tables :—

$$f = 5.4 - \frac{87}{D + 21} - \frac{(D-5)(50-D)(8-4c)}{500}$$

In composite vessels, for 4 *c* write 4.12 *c* ; and in wooden vessels, for 4 *c* write 4.24 *c*.

Mr. Rundell's latest paper upon freeboard, which we may suppose contains his more matured views of the question, was made public a few months ago. By the table there given, the percentage of buoyancy varies with the length from 15 to 42. The percentage is obtained by a method certainly not more accurate than Mr. Martell's. The result for the freeboard of first-class iron steamers may be thus expressed—

$$F = \left(\frac{L}{D} + \frac{L}{20} - 1 \right) \frac{T}{L \times B \times .8}$$

For first-class iron sailing vessels—

$$F = \left(\frac{L}{D} + \frac{21L}{400} + 7. \right) \frac{T}{L \times B \times .8}$$

For composite vessels, change 7 to 8 ; in hardwood vessels, for 7 write 9 ; and in softwood vessels, write 11.

These rules of freeboard must depend for their utility, as we said in commencing this article, in the first place upon the range of the experience upon which they are based ; and, second, upon the sound interpretation of such experience. So far as the first point is concerned, both Mr. Martell and Mr. Rundell professed to have used a large amount of data obtained from the experience of surveyors, shipbuilders and owners.

The third rule of freeboard of volume which we have to consider, has not this recommendation, its proposer having stated that it being within his knowledge that the old rule of 8 inches to the foot was good for vessels of certain dimensions, that the coaster's rule of 2 inches was applicable to ships of the average size of coasters, and that 2½ inches to the foot was a good ratio for others, it occurred to him that the generalisation, $f^3 = \frac{L}{B}$ which gives these ratios, would give a good rule of freeboard. This, when the depth bore the average relation to the breadth, would become

$$f^3 = \frac{L}{D \times 1.66}.$$

This he gives as the origin of his formulas, the greater of the two

results to be the freeboard. The element of fineness is then introduced when the formulæ become for iron vessels—

$$f^2 = \frac{144 \times T}{D \times B^3}$$

$$\text{And } f^2 = \frac{86.4 \times T}{B \times D^3}.$$

Upon this very slender basis of fact, tables are worked out giving the ratio of freeboard to depth of hold for vessels of more diverse characters than are provided for by any other freeboard rule, indeed than are yet in existence. The co-efficients of fineness range from .55 to .84, the lower being about suitable for a very fine yacht. When it is stated that Mr. Wymer contemplates the use of his rule for vessels over 600 feet long, and of 7,600 tons, it will be seen that his faith in his own idea is practically unlimited.

As to the facts upon which the more important rules are based, it has been remarked by Mr. Rundell that so far as Mr. Martell's freeboard scale depends upon depth of hold, it does not much differ from the Liverpool rule of 1869. On comparing the freeboard given for the mean co-efficient of fineness, .67, we notice that for ships below 20 feet depth, the Liverpool scale, which is for both steamers and sailing ships, is about a mean between Mr. Martell's rules for steamers and those for sailing ships. Above that depth the Liverpool rule gives a much higher freeboard. This would, in most cases, be compensated for by the fact that in most vessels of large dimensions Mr. Martell's rule would increase the freeboard on account of excessive length, so that, practically, the rules would give not dissimilar results. The fact we deduce from this is, that for vessels of average proportions and form, the two rules represent the usual practice for the various sizes, the size being indicated by the depth of hold. In cases of departure from the usual proportions, it is generally agreed that if the length is excessive, there should be a compensating increase in freeboard. A formula thus framed—

$$F = a \times D + b (L - c)$$

would give a freeboard thus varying for depth only, when length did not exceed some fixed dimension, afterwards for the excess of length of over that fixed dimension. We have ascertained the constants which would adapt this formula to the recorded experience of the loading of first-class iron steamers, as embodied in the more important rules of freeboard which we have noticed, and find that it would stand thus:—

$$F = 2 D + \frac{L - 200}{4}$$

the second quantity to be only used when the length exceeds 200

feet. From what we know ourselves of the practical part of the question, however, we think that freeboard on paper has always been more than it need be in practice. For flush-decked first-class iron steamers, with good coamings and average sheer, we believe the rule

$$F = 2D + \frac{L - 200}{6}$$

would give results within the safe limits of loading, and more in conformity with the present practice of respectable firms. This simple rule may be thus worded: "Freeboard in inches is equal to twice depth of hold in feet added to one-sixth of the excess of length above 200."

We would remark, in conclusion, that if shipowners should prefer working their load-line on the basis of a percentage of tonnage or of outside volume, it would be best to do the thing accurately and not trust to any illusory co-efficients of fineness.* Either have a scale of displacement got out or else use a scale of tonnage such as is described in the *Nautical Magazine* for May, 1874.

THE PROGRESS OF BRITISH MERCHANT SHIPPING.

WE recommend to the careful consideration of all persons who take an interest in the prosperity of our British Mercantile Marine, the annual return bearing the above heading, which was presented to the House of Commons during the late Session. There are few returns laid upon the table of the House of greater importance, or more carefully elaborated, than that to which we refer. Fulfilling even more than its title implies, it deals with a wide-variety of subjects connected with shipping. From the actual statement of the increase in tonnage, to an analysis of the nationality of the crews of certain British vessels—from the statement of the number of merchant

* It may, however, be said that the most important part of the effect of fineness upon a judicious freeboard is due to rise of floor and not to fine water-line. It would be easy to modify any rule depending upon depth of hold so as to take in rise of floor, thus: let the registered breadth be divided by six, and two of the divisions be set off from the middle line inside the ship. Now measure the depth at each of these points, add these two depths to the depth of hold, divide by three for a mean depth. To make this mean depth available to be used for any ordinary rule, it will be necessary to increase it 2 per cent. for sailing ships and one per cent. for steamers, which in vessels of the average rise of floor brings it up to the full depth of hold. The figures we have given for this are to illustrate the principle of the method, and are of course subject to modification.

seamen volunteering into the Navy, to an account showing the sums expended in saving life—it leaves no detail untouched.

It is scarcely necessary to point out that this return possesses a special importance just at present. With an immediate prospect of more extended legislation, it is above all things necessary that we should possess reliable facts from which a clear start can be made. Still more important and interesting will these facts become when sufficient time shall have elapsed to allow the legislation, which is now being initiated, to come into full operation; as it is from tables of this description that we shall be enabled to form judgments of the working of each succeeding enactment, that will admit of no dispute. It is true the country now possesses a class of reformers who require no facts upon which to base their measures. These amateur legislators can dispense with figures and statements of every kind. Apparently their own imaginations are quite sufficient to enable them to frame laws for the removal of any evil in existence. A lively fancy, together with a good proportion of unreasoning sympathy, seems to be the groundwork upon which the legislation of the future is to be based; and it is unfortunate, though not the less true, that measures started in this style are tolerably sure to receive the cordial support of that large portion of the community which the *Times*, in speaking of recent Parliamentary proceedings in connection with Merchant shipping, describes as “habitually preferring emotion to calm judgment.” We sincerely trust the next ten years may not show that the national confidence has been misplaced.

Among the tables of which the last return is composed, that (No. 5) showing the aggregate tonnage of the merchant navies of Great Britain, the United States, France, Holland, and Norway, from 1815 to 1873, is the one to which we would first direct attention. From this it will be seen that the tonnage of the British Empire has risen from 2,680,000 tons in 1815 to 7,290,000 tons in 1873. During the ten years from 1863 to 1873 it was increased by upwards of 670,000 tons. The tonnage of France stood at 1,068,000 tons in 1873; that of the United States (including that enrolled for the home trade, and lake and river steamers) at 4,639,000 tons; but the American tonnage registered for over-sea trade stands only at 1,423,000 tons.

It is true an apology is almost necessary for referring to this particular table. Of late we have been treated to such a variety of statements showing the tremendous increase that is constantly taking place in the various branches of British trade, that figures of this description begin to appear rather stale and uninteresting. But in the present case we refer to them merely for the purpose of showing how vast are the interests that must necessarily be involved in any question that bears at all seriously upon shipping. Whatever evils may exist in the trade, these figures

should be a standing warning to all persons who are in favour of adopting drastic measures for their removal. And further than this, it is perfectly certain that the prosperity of our Mercantile Marine must be very closely connected with prosperity of the nation at large. In dealing with merchant shipping the whole subject is not unfrequently spoken of as though it were wholly and solely a shipowners' question—as though only their pockets were likely to be affected by any prosperity or depression in the trade. But, as a matter of fact, there is not a man, woman, or child, in the country, whose daily life is not influenced by the condition and magnitude of our Mercantile Navy. It must be remembered that, of all nations, England is, in one respect, the least self-supporting. Her very existence, as a nation, depends on her connection with the outer world, and with this one fact before us, it is not difficult to see how great is the importance which every influence upon the means of maintaining that connection must necessarily have upon her welfare.

The next tables to which we shall refer are Nos. 7 and 8. No 7 shows the tonnage of vessels built in the United Kingdom in each year, from 1858 to 1878, and No. 8 shows the number and tonnage of vessels added to, and deducted from, the British register in the year 1878. From No. 7 it will be seen that, although there was a falling off to the extent of more than 20,000 tons in the vessels built for home and the Colonies, there was still an increase in the tonnage built for foreigners. And table No. 8 shows that, although 54,000 tons were added to the British register in 1878, the aggregate number of vessels was decreased by 210. This reduction took place entirely among sailing vessels, which show a decrease of no less than 400, a diminution which was partially compensated for by the addition of 190 steamers to the register. But what we wish especially to point out is that 806 vessels, made up of 210 sailing, and 96 steam ships, were sold to foreigners, or to the Colonies, during the year. Taken in conjunction, these two tables possess a remarkable significance at the present time. It may, perhaps, be premature to conclude that these fluctuations are solely attributable to the Act relating to unseaworthy vessels that was passed in 1872, but following so closely as they do upon the legislation which took place in that year, it is not unreasonable to suspect that they may be, in a great measure, the result of the effort that was then made to stamp out of existence the rotten portion of our Mercantile Fleet. The falling off may possibly have been assisted by causes which do not at present appear, but, at the same time, there is good reason for supposing that the Act of 1871 has given a slight impulse to foreign trade at the expense of our own. At all events, these figures show that the balance of competition in the carrying trade is very evenly adjusted, and that very little is necessary to turn the scale against us. At present, however, we must content ourselves with draw-

ing attention to the position of affairs, though we may at the same time add that there are no tables connected with the shipping trade that should be watched more closely than these in the future, as it is from statements under these particular headings that reliable estimates may be formed as to the working of the different enactments that may be passed.

In pointing out these facts, we by no means wish to imply, even in the event of these fluctuations being the result of the legislation of 1871, that we consider the Act of that year a mistake. On the contrary, in the main, we believe it to be a most judicious measure, and, although it may have had the effect of driving a certain number of vessels under foreign flags, we think the benefit derived from it has far more than counter-balanced any evil which it may have produced. At the same time, the figures we have quoted may not unreasonably be taken as an indication of what may be expected from measures of a more sweeping description.

Some interesting facts may be found in table No. 21, which gives the average rates of wages of able seamen in various trades in six of the principal ports in the United Kingdom, in each year, from 1848 to 1874 ; in 1848 the average rate per month was 48s. ; coming down to 1864, we find the average in that year to be 56s., while in 1874 it stood within a fraction of 70s. per month. From these figures it will be seen that whereas the average rate rose only 10s. during the seventeen years from 1848 to 1864, it has advanced 14s. during the last ten years. We frequently see statements to the effect that sailors are underpaid, but it may be questioned whether the wages of any class of men have risen to such an extent, and so rapidly, as those of seamen have done within the last few years. A glance at the table to which we now refer will show that 80s per month is a common rate of pay, while in some cases 90s. and even 100s. is the amount earned per month. Nor does it seem that employment has been scarce of late. According to a foot-note to this return, the Superintendent at Poplar, in speaking of both 1872 and 1873, reports that "there has been a very limited supply of seamen throughout the year. Masters have managed to fill up their crews (sometimes with difficulty), but have had no choice." Now, 70s., 80s., and 100s. per month means something like £40, £50, and £60 per year, and out of this the seaman has simply to provide himself with clothing. With the exception of the time he chooses to pass on shore, he is never under the necessity of spending a single penny. And we think that for men employed in an occupation where nothing more than common intelligence combined with a certain amount of practical experience, is required, this rate of pay can by no means be considered inadequate. Yet we regret to say that, in spite of the good wages earned, a large number of our merchant seamen are in a far worse condition than might be expected. Notwithstanding all the efforts made to protect them, both ashore and afloat, they still

persist in behaving in a manner that brings disgrace and ruin upon themselves, and, we might almost add, a discredit upon their country. "God helps those who help themselves," says the proverb, but really it would seem that a large proportion of our seamen have made up their minds neither to help themselves, nor to be helped by any means, either Divine or human. We hear a great deal about their being carried on board the vessels in which they have shipped themselves, in a state of helpless intoxication; and if they are to be protected from their own folly, it would appear that the only means by which this could be accomplished would be to carry them on shore again at the end of the voyage, and carefully nurse them in some asylum until their next departure. Their reckless behaviour is disheartening to an extent that can be understood only by those who are constantly devoting their attention to the improvement of their condition. To see men coming ashore voyage after voyage, and spending the earnings of some five or six months in as many days' brutal dissipation, and then shipping again absolutely penniless, is enough to cause their most ardent sympathisers to despair of ever bettering their lot. And what kind of seamanship can be expected from men who have to be carried on board their vessels? It is not as though the ship could be detained until the crew have recovered from the effects of their debauchery. The captain is anxious to be off, both for the sake of his own credit, and knowing as he does that the men will be on shore again unless a start is made; so the anchor is weighed, and then it is easy to imagine the state of discipline, and the kind of look-out that is kept on board a vessel where half the crew are in that comatose state which always succeeds a bout of drunkenness. It would be well if some system could be devised by which unseaworthy sailors, as well as unseaworthy ships, could be prevented from putting to sea, for it is highly probable that quite as many losses are attributable to the one cause as to the other. When we remember that this condition of affairs invariably takes place at the very time when the greatest amount of care and caution are required for the safe navigation of the vessel, the wonder is, not that so many vessels are lost around our coasts, but that so many escape destruction.

One is almost tempted to ask what is the use of high wages to men who conduct themselves in this style. They are an advantage to crimps and waterside harpies, certainly, but for a large proportion of our seamen they simply result in so much additional drunkenness, and constitutions so much the more undermined by debauchery and disease. Of course, these remarks do not apply to the entire body of our sailors. Fortunately, there is a large class who conduct themselves as men, but at the same time there is a class almost as large who seem determined that every effort which is made for their benefit shall prove fruitless, and who

behave in a manner that would be absolutely ridiculous, were it not for the terrible consequences their folly involves.

Statements have from time to time been put forward that our merchant ships are largely manned by foreigners; but, according to table 22, which shows the proportion of foreign to British seamen employed in the merchant service, it appears that the percentage of foreigners was no more than 10·87 in the year 1878. The lowest percentage from 1851 to 1878 was 8·7, and the highest during the same period, 12·6 per cent. Of late years, the percentage has remained almost stationary, at something like 11 per cent. From these figures it is clear that the theories which are occasionally put forward for the purpose of attributing some of the darker phases of our class of merchant seamen to a large intermixture of a disreputable foreign element, are without much solid foundation. England may still take credit for the virtues of her sailors, but she certainly cannot as yet be justified in disowning their vices.

There is one more table to which we must draw our readers' attention. We refer to No. 28, which shows the proportion of men to every 100 tons, in both home and foreign trade, in 1854, and from 1869 to 1878. Taken in the aggregate, the figures in this table show that whereas 4·86 men were carried to each 100 tons in 1854, only 3·52 men were carried in 1878. The table distinguishes sailing from steam ships, and, of course, the falling off is much greater in the latter than in the former class of vessel; the decrease in the case of steam-ships being no less than 2·28 to each 100 tons. Indeed, in the case of sailing ships engaged in the home trade, there is a slight increase, 5·28 men being carried in 1878 as against 4·97 in 1854. And in sailing ships engaged in the foreign trade there is a decrease of only 1·28 men per 100 tons. Judging from these figures, it does not appear that there is much ground for the statements that are sometimes made to the effect that ships are undermanned in the present day as compared with formerly. The improvements which have been made in the rigging and general equipment of sailing vessels during the last twenty years are more than sufficient to account for the small decrease which has taken place in their crews. Of course, it is only in the larger class of vessel that these improvements have been introduced to any appreciable extent. Small coasters are fitted much in the same style now as they were twenty years since; nor could the mechanical appliances for economising labour that are to be found on board every foreign-going vessel of heavy tonnage be turned to profitable account in their case.

It is in steamers engaged in the foreign trade that the greatest reduction in the proportion of men per 100 tons is to be found. Whereas 7·69 men were carried in 1854, only 3·97 men were carried in 1878, thus showing a decrease of 3·72 men, or nearly 50 per cent. of

the entire crew. At first sight this great falling off would seem rather difficult to explain, but when we compare the steamers of to-day with those of twenty years ago, the diminution does not appear to be unwarrantably excessive. When we remember how much of the heavy work that was formerly done by hand is now performed by steam, it is not surprising that a reduction of even 50 per cent. should have been made in the crews of vessels of this description. The same power which propels the ship is now utilised in weighing the anchor, in working the pumps, in getting out the cargo, and in performing many other duties that in days gone by were done solely by manual labour. It would be wrong, therefore, to infer that this table shows a greater diminution in the crews of steam vessels than is compatible with their safe working, or that ship-owners, in their regard for economy, have failed to give sufficient attention to security.

And here we must conclude. In dealing with this return, we have confined our remarks to those statistics which we considered were likely to possess the greatest general interest, and in doing this we have been compelled to leave the greater portion of the tables untouched. In conclusion, we recommend all who are anxious to obtain full and detailed information concerning our Mercantile Marine to refer to the return itself. They will there find much that will interest them; and we may once more express our opinion that there are no annual returns which are likely to have greater importance in the future than those showing the progress of British shipping.

CORRESPONDENCE.

BELIZE, BRITISH HONDURAS.

To the Editor of the "Nautical Magazine."

SIR,—On my first voyage to Belize, British Honduras, I thought it very curious that no one seemed to know anything of the way from Half Moon Bay lighthouse to Belize Town, a distance of about 48½ miles (nautical), between dangerous reefs and banks, and that the captains seemed to give up sole charge to a negro pilot, who had all the self-assurance of his race without the requisite amount of knowledge to be implicitly trusted. It also seems strange that I have not, although I have looked often enough, been able to find any published information on this subject. Having

made thirty-six voyages to Belize in the royal mail steamer *Belize*, I had the opportunity of observing the landmarks that were necessary to clear the reefs and banks from English Bay to Belize City, and beg to hand you the following particulars, having proved their accuracy on many voyages to that part of the coast, and which will, I trust, render some service to ships sailing in those waters, by making their masters less dependent on an oftentimes ignorant negro pilot.

ENTRANCE TO GRINNELS CHANNEL (BELIZE, BRITISH HONDURAS).

The entrance to the anchorage at the Sanbour is found by bringing Goff Bay to bear N. by W., or N. by E., and English Bay W.S.W. These bearings give a good anchorage in from 6 to 7 fathoms of mud and shell.

ENTRANCE TO ENGLISH BAY.

To enter English Bay Channel, bring the bay to bear W.S.W., when so, steer W.N.W. for Water Bay spit buoy. The distance from Water Bay spit buoy to the entrance of English Channel is $1\frac{1}{2}$ mile. The mark to clear Water Bay spit is to bring English Bay to bear E.S.E., and to close Sergeants Bay on the S.E. point of Water Bay, opening the Spanish look-out channel at the same time. When clear, haul up N. by W. for the Twelve Foot Bank Buoy Reefing, Negro Head just on the point of Long Bay, until you bring Goff Bay about a cable's length from the southernmost point of Water Bay, then steer W.N.W. until you open Sergeants Bay to the north of Water Bay; these marks on, clear the Twelve Foot Bank. The buoy lies $1\frac{1}{2}$ mile from the White Bank Buoy. From Twelve Foot Bank Buoy steer S.W. $\frac{3}{4}$ S. for the White Bank Buoy; the leading mark is to bring the North Bub right over Robinson Point, and the cheque mark to open Bannisters Channel.

The White Bank Buoy lies in $2\frac{3}{4}$ fathoms. From White Bank Buoy steer W. $\frac{1}{2}$ N. for Spanish Bay Spit Buoy, commonly called Middle Rock Buoy. The mark to clear Spanish Bay Spit is to bring the South Bub over One Man Bay, and to bring Sergeants Bay on the north point of Water Bay.

Middle Rock Buoy lies in $2\frac{1}{2}$ fathoms water. The cheque mark to keep clear of Spanish Bay Spit is to close West Point Spanish Bay, Long Bay on with Spanish Bay. From the Middle Rock Buoy steer S.S.W. for the Half-way Buoy, until you open Ramson Bay to the west of Spanish Bay, then haul up gradually for the Half-way Buoy, which lies in 4 fathoms mud and coral. The course through the Half-way Channel is N.W. $\frac{1}{2}$ W. Steer that course until you open Spanish Bay to the north of Water Bay, and then stand up for Belize.

The Currents are influenced by the winds, and below English Channel are entirely regulated by the same.

The two Catholic church towers in one give mud and sand at 13 ft. 6 in., 18 ft. 9 in. The Court House staff in one with church steeple gives 14 ft. mud and sand.

I am, Sir, yours faithfully,

WILLIAM CHAS. ARMSTRONG.

10, Arundel Street, Strand.

NAVIGATION OF TORRES STRAITS.

To the Editor of the "Nautical Magazine."

SIR,—In August, 1878, I took the liberty of writing you in connection with my first passage through Torres Straits for India. As I have a great wish that some of the needless dread of Torres Straits should be taken from shipmasters who have not tried the route, I now again beg to trouble you with my second passage, showing that the navigation of that route cannot be so very difficult. I sailed from Sydney on the afternoon of June 8th, and sailed through the Coral Sea as per track on Admiralty Charts, and on the 25th June, at 1 p.m., sighted Bramble Bay, at 7 p.m. Stephen's Island, bore east four miles with a moderate monsoon and cloudy weather; stowed all small sails and put ship under topsails, jib, main-top gallant sail and spanker, and steered S.W. by S. for two hours, and S.S.W. $\frac{1}{2}$ W. other three hours until midnight, at an average speed of three knots an hour, main-yard at times braced a shiver to ease the speed; at midnight tacked and sailed to the E.N.E., dodging in the wind until 3 a.m. on the 26th, Marsden Island then bearing E. by S., and Rennel Island S.S.W. $\frac{1}{2}$ W. (the moon four hours high), we tacked and steered our course, and at 4.30 a.m. passed Rennel Island, made all sail; at noon, abreast of Nine Pin Rock, and at 4 p.m. cleared Torres Strait by the Prince of Wales Channel, this being my second time without letting go an anchor. Whole time occupied this trip, twenty-six hours, and on the first trip, thirty-one hours.

There was no risk (with proper care and precaution) in doing what I did, for the usual wind in that part of the Straits is at right angles to the course either way, so that a ship can be sailed to and fro on a fine night, and under the same circumstances I should have no hesitation in adopting the same course. For my own part I cannot see why the passage should be so dreaded, nor can I understand why 2½ per cent. extra insurance should be charged, thereby discouraging ships from taking the route. In no case, I think, should more be charged than the usual insurance for the China Sea, as I consider the navigation of Torres Straits during the S.E. monsoon, from four to six months of the year, quite as safe as, or even more than, many of the straits and

passages in the China Sea, but I certainly should recommend that the Great North-east Channel be used. There are ships now sixty-five days out from Australia, and none of the ships have arrived here that left within a month of my sailing, which makes me feel that it would be of great advantage to have the Torres Straits route more fully developed, and the veto in the shape of extra insurance put aside.

I fear I have encroached too much on your valuable space, but I must leave it entirely in your hands to cull what you think best, knowing full well that you are always ready to add anything that may tend to benefit shipmasters and the mercantile community.

I am, Sir, your most obedient servant,

WILLIAM NOTT, Master.

Berwickshire, Manila, July 21st, 1875.

P.S.—We arrived here on 16th inst., 38 days from Sydney.

HEALTH-CARDS FOR SEAMEN.

To the Editor of the "Nautical Magazine."

SIR,—As the efficiency of the crew greatly depends on the health of the seamen engaged, I would venture to draw attention to the desirability of having some record of the previous health of those who offer themselves for service at sea, and to suggest a method of making that record available.

Each seaman should be provided with what I would call a health-card—a card made of strong material—on which, at the end of every voyage, either the captain or the surgeon should note down briefly the general state of health of the seaman, and what complaint or complaints, if any, he has suffered from during the voyage; and this card should be asked for, and examined, before shipping.

Certainly in services such as the R.M.S.P., the P. and O., and others, a form of that kind should be possessed by each seaman, as it would be the means of preventing the engaging of inefficient hands, whose unfitness might escape detection during their superficial examination by the surgeon at the shipping-office, but would be immediately discovered by reference to the card, the use of which I have ventured to recommend.

I am, Sir, your obedient servant,

J. NUMA-RAT, Surgeon, R.M.S.P. Co.

R.M.S. Club, Southampton, Sept. 15, 1875.

[We agree with our correspondent that it is extremely desirable that there should be some evidence to guide masters of vessels in regard to the health of seamen whom they engage, and we very gladly print the above letter, hoping that attention may be drawn to the matter; but we

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fear that the inherent deceitfulness of many of our sailors, especially those who are diseased, would render such a plan as our correspondent proposes entirely nugatory. They would lose, forge, borrow, and exchange cards with the greatest freedom, and no dependence could possibly be placed upon them, even if the cards were produced.—Ed.]

INSTRUCTIONS TO SURVEYORS.

We are often asked, as we have been frequently this month, where anybody can learn anything about the Board of Trade rules for Safety-valves, Boilers, Lifeboats, and so on. We can only recommend our readers to invest five shillings and they will obtain a reprint of all the instructions on the subject. The book, with a most exhaustive index, which saves the hunting through the pottle of hay for the needle they want, can be obtained of J. D. Potter, Admiralty Chart Agent, or of Pewtress and Co., 15, Great Queen Street, Lincoln's Inn Fields, W.C.; or of any agent of the *Nautical Magazine*. It is a capital book, well got up, and very cheap at the price.

STEAM AS A FIRE EXTINGUISHER.—A remarkable instance of the efficiency of steam as an extinguisher of fire in an enclosed space, is afforded by the report of the master of the S.S. *Petrarch*, of Liverpool, respecting an explosion that occurred on board his vessel, on the 11th July last. The *Petrarch* was bound from Genoa to Antwerp, with a cargo of sulphur, &c., and after passing Lisbon experienced very severe weather, and at 10 a.m. on the 11th July, was struck by a heavy sea, which threw her on her beam ends. A loud report was then heard from the fore-hold, and smoke was discovered arising from the ventilators and hatches. The hatches were immediately opened to ascertain the cause, and the cargo was found to be on fire. The vessel was then put before the wind, and the hose laid on, and four feet of water pumped into the hold. The fire, however, increased and finding water of no avail, the master ordered the steam pipes leading to winch to be cut, the hatches battened down, and steam turned on at high pressure from the main engine. These orders having been executed, sail was set for Belle Isle, where the vessel arrived at 8.30 a.m. on the 12th. At 6 a.m. the cargo was still found to be burning, but at 8 a.m. the fire was mastered, and the vessel then proceeded to St. Nazaire, where she arrived in safety. The master attributes the extinction of the fire and the consequent safety of the vessel, to the use of the steam jets. We respectfully recommend the above incident to the consideration of the Royal Commissioners on spontaneous combustion of coal in ships.

THE SEA FISHERIES OF IRELAND.

THE Inspectors of Irish Fisheries in their Report which has just appeared state that, by the assistance of the officers and men of the Coastguard, in addition to the Collectors of Customs, they have been enabled to present a tolerable accurate account of the vessels, and of the persons engaged in those fisheries. In the year 1874 the craft of all description numbered 7,246, and the crews 26,924. Upon a comparison with former years, and going back to 1846, a considerable decline has taken place. It appears that in 1846 there were 19,888 vessels and boats manned by 118,078 men and boys, thus showing that the vessels and boats are now reduced to nearly a third, and the crews diminished to less than a fourth. The rapid decline which took place for some years subsequent to 1846 has been attributed to the famine, the decrease has, however, gone steadily on up to the present time. Owing to emigration having taken away many of the fishermen and largely diminished the consumers, numbers of the former have been compelled to adopt other pursuits, whilst the poverty of others has rendered them unable to maintain their boats and gear in serviceable order. The inspectors since their appointment have strongly advocated the granting of loans on proper security as the only means of arresting further decline. The applications have been very numerous and out of all proportion to the real necessities of the fisheries, but they have confidence that by the exercise of due discrimination in selecting proper parties to whom to advance loans, and seeing so far as practicable that such loans are properly applied that much good will be accomplished. Amidst this present decay and therefore certain amount of suffering to the persons engaged, it is pleasing to learn that most satisfactory reports have been received from the twenty-nine divisions into which the coast is divided, with regard to the orderly conduct of the fishermen and the entire absence of conflicts between persons following different modes of fishing.

The subject of trawling has especially engaged the attention of the inspectors, who nearly two years ago obtained permission from the Admiralty to request the scientific staff of H.M.S. *Challenger* to make certain investigations so as to aid in the elucidation of some points in dispute. During the year one of the inspectors paid a visit to Cornwall, with a view of obtaining further information respecting the capture and care of pilchards, and to try if any of the persons largely engaged in the export of this fish could be induced to avail of the opening for operations offered in Ireland now that the supply is failing in Cornwall. Vast shoals of this fish frequented the coasts and bays of Cork and Kerry during 1874,

but the quantity captured as compared with what might have been taken was comparatively small. Still it is satisfactory to find that although this fish is not appreciated as it deserves to be, yet the residents along the shores are gradually getting over their prejudices, and in some localities small quantities which were cured in pickle obtained a ready sale at fairly remunerative prices. In Bantry Bay, inside Whiddy Island, numerous shoals appeared from July up to January. One of the Coast-guard officers in Kerry reports that "such quantities of pilchards have been landed this year at Kenmare that they have been carted away for manure by every person who cared to take them." It seems deplorable that the vast wealth offered by this fish for some years past has not been availed of, more especially as during some seasons, including the two last, the quantity taken in Cornwall has been insufficient to meet the foreign demand. Ireland could well have supplied it, if means had been only taken to utilize the splendid gift suffered to go to waste. Independent of the export trade that might be carried on in the cured fish, a large quantity of valuable oil might be obtained even if no other use was made of the pilchard than to press it, after which the refuse might be converted into good manure. At a very moderate calculation the County of Cork might in the last ten years have realised many thousands of pounds sterling clear profit, if proper means had been taken for the capture and utilisation of this valuable fish so prized in England and disregarded in Ireland.

The capture of herrings was greater than the previous year, although the average price was less. At Howth the capture amounted 101,405 meuse; at Ardglass, 54,576; at Arklow, 17,211; at Kilkeel, 6,220; at Greenore, 7,170. The total gross receipts for the three former places amounted to £162,554. In addition, a good deal of herrings were brought into some minor places, but as there were no means of obtaining statistics returns cannot be given. The mackerel capture was over 100,000 boxes of six score each, which was less than the former year when the capture was 120,000 boxes. There is great difficulty in obtaining anything like accurate information with regard to the quantity taken off the coast as most of the fish taken by the French vessels was cured on board and brought to France, and the quantity, which must have been very large from the size of the vessels, could not be estimated. During the year there were granted five new licences for the cultivation of oysters, making a total of 180 licensed beds, occupying 18,825 acres of foreshore and sea bottom. The amount taken on the principal natural oyster bed off Arklow was 7,520 barrels of 450 each, large and small, at prices from 18s. to 24s. 6d. per barrel; in the previous year there were 18,640 barrels taken. The only other natural banks of any magnitude are those lately the property of the Law Life Insurance Company in the County Galway. It is

difficult to obtain the amount realised annually by them, but it is believed not to exceed £3,000 worth. Carlingford, once so productive, is nearly dredged out. This year the take did not exceed a few thousand. The same tale of ruin might be told of nearly every other place in Ireland noted for oysters, the cause in every case being the same, over dredging and a succession of bad spitting years.

Nothing can contribute more to promote the fisheries than suitable harbours. The inspectors recommend that grants should be made for the improvement or construction of fishery piers or harbours at Bournapeaka, County Cork; Smeerogue or Poulally, County Galway; Mullranny, County Mayo; Kinsale, County Cork; North Harbour, Cape Clear, County Cork; Burton Port, County Donegal; Rathmullan, County Donegal; Ardglass, County Down; and Arklow, County Wicklow. Owing to the tempestuous and uncertain weather that prevails on many parts of the coast, the fishermen often dare not venture out unless they have a safe harbour to run for in the event of a storm threatening. In many instances where fishery enterprise would be much aided by the construction of harbours, the conditions, which require at least a fourth of the cost to be contributed by the locality, offers an insurmountable obstacle. Another matter which has been strongly represented to the inspectors concerning the non-existence of public marine insurance companies for insuring fishing craft, such insurance being effected in England by the owners of vessels amongst themselves; the same class in Ireland, having no such associations, labour under considerable disadvantage. The inspectors are endeavouring to assist boatowners in the formation of such associations, and they also urge, on their own behalf, the great desirability of having permanently attached to the department a cutter or steam-boat. Such would prove most useful, not only for enforcing the laws with respect to sea and salmon fisheries, but would enable them to make investigations and experiments likely to prove useful. At the time of writing, from want of a suitable vessel to convey them, they were prevented from making most necessary personal inquiries in reference to the administration of the loans in some of the western islands, and from the same cause other islands had not been visited for a considerable time.

should be a standing warning to all persons who are in favour of adopting drastic measures for their removal. And further than this, it is perfectly certain that the prosperity of our Mercantile Marine must be very closely connected with prosperity of the nation at large. In dealing with merchant shipping the whole subject is not unfrequently spoken of as though it were wholly and solely a shipowners' question—as though only their pockets were likely to be affected by any prosperity or depression in the trade. But, as a matter of fact, there is not a man, woman, or child, in the country, whose daily life is not influenced by the condition and magnitude of our Mercantile Navy. It must be remembered that, of all nations, England is, in one respect, the least self-supporting. Her very existence, as a nation, depends on her connection with the outer world, and with this one fact before us, it is not difficult to see how great is the importance which every influence upon the means of maintaining that connection must necessarily have upon her welfare.

The next tables to which we shall refer are Nos. 7 and 8. No 7 shows the tonnage of vessels built in the United Kingdom in each year, from 1858 to 1878, and No. 8 shows the number and tonnage of vessels added to, and deducted from, the British register in the year 1878. From No. 7 it will be seen that, although there was a falling off to the extent of more than 20,000 tons in the vessels built for home and the Colonies, there was still an increase in the tonnage built for foreigners. And table No. 8 shows that, although 54,000 tons were added to the British register in 1878, the aggregate number of vessels was decreased by 210. This reduction took place entirely among sailing vessels, which show a decrease of no less than 400, a diminution which was partially compensated for by the addition of 190 steamers to the register. But what we wish especially to point out is that 306 vessels, made up of 210 sailing, and 96 steam ships, were sold to foreigners, or to the Colonies, during the year. Taken in conjunction, these two tables possess a remarkable significance at the present time. It may, perhaps, be premature to conclude that these fluctuations are solely attributable to the Act relating to unseaworthy vessels that was passed in 1872, but following so closely as they do upon the legislation which took place in that year, it is not unreasonable to suspect that they may be, in a great measure, the result of the effort that was then made to stamp out of existence the rotten portion of our Mercantile Fleet. The falling off may possibly have been assisted by causes which do not at present appear, but, at the same time, there is good reason for supposing that the Act of 1871 has given a slight impulse to foreign trade at the expense of our own. At all events, these figures show that the balance of competition in the carrying trade is very evenly adjusted, and that very little is necessary to turn the scale against us. At present, however, we must content ourselves with draw-

ing attention to the position of affairs, though we may at the same time add that there are no tables connected with the shipping trade that should be watched more closely than these in the future, as it is from statements under these particular headings that reliable estimates may be formed as to the working of the different enactments that may be passed.

In pointing out these facts, we by no means wish to imply, even in the event of these fluctuations being the result of the legislation of 1871, that we consider the Act of that year a mistake. On the contrary, in the main, we believe it to be a most judicious measure, and, although it may have had the effect of driving a certain number of vessels under foreign flags, we think the benefit derived from it has far more than counter-balanced any evil which it may have produced. At the same time, the figures we have quoted may not unreasonably be taken as an indication of what may be expected from measures of a more sweeping description.

Some interesting facts may be found in table No. 21, which gives the average rates of wages of able seamen in various trades in six of the principal ports in the United Kingdom, in each year, from 1848 to 1874; in 1848 the average rate per month was 48s.; coming down to 1864, we find the average in that year to be 56s., while in 1874 it stood within a fraction of 70s. per month. From these figures it will be seen that whereas the average rate rose only 10s. during the seventeen years from 1848 to 1864, it has advanced 14s. during the last ten years. We frequently see statements to the effect that sailors are underpaid, but it may be questioned whether the wages of any class of men have risen to such an extent, and so rapidly, as those of seamen have done within the last few years. A glance at the table to which we now refer will show that 80s. per month is a common rate of pay, while in some cases 90s. and even 100s. is the amount earned per month. Nor does it seem that employment has been scarce of late. According to a foot-note to this return, the Superintendent at Poplar, in speaking of both 1872 and 1873, reports that "there has been a very limited supply of seamen throughout the year. Masters have managed to fill up their crews (sometimes with difficulty), but have had no choice." Now, 70s., 80s., and 100s. per month means something like £40, £50, and £60 per year, and out of this the seaman has simply to provide himself with clothing. With the exception of the time he chooses to pass on shore, he is never under the necessity of spending a single penny. And we think that for men employed in an occupation where nothing more than common intelligence combined with a certain amount of practical experience, is required, this rate of pay can by no means be considered inadequate. Yet we regret to say that, in spite of the good wages earned, a large number of our merchant seamen are in a far worse condition than might be expected. Notwithstanding all the efforts made to protect them, both ashore and afloat, they still

persist in behaving in a manner that brings disgrace and ruin upon themselves, and, we might almost add, a discredit upon their country. "God helps those who help themselves," says the proverb, but really it would seem that a large proportion of our seamen have made up their minds neither to help themselves, nor to be helped by any means, either Divine or human. We hear a great deal about their being carried on board the vessels in which they have shipped themselves, in a state of helpless intoxication; and if they are to be protected from their own folly, it would appear that the only means by which this could be accomplished would be to carry them on shore again at the end of the voyage, and carefully nurse them in some asylum until their next departure. Their reckless behaviour is disheartening to an extent that can be understood only by those who are constantly devoting their attention to the improvement of their condition. To see men coming ashore voyage after voyage, and spending the earnings of some five or six months in as many days' brutal dissipation, and then shipping again absolutely penniless, is enough to cause their most ardent sympathisers to despair of ever bettering their lot. And what kind of seamanship can be expected from men who have to be carried on board their vessels? It is not as though the ship could be detained until the crew have recovered from the effects of their debauchery. The captain is anxious to be off, both for the sake of his own credit, and knowing as he does that the men will be on shore again unless a start is made; so the anchor is weighed, and then it is easy to imagine the state of discipline, and the kind of look-out that is kept on board a vessel where half the crew are in that comatose state which always succeeds a bout of drunkenness. It would be well if some system could be devised by which unseaworthy sailors, as well as unseaworthy ships, could be prevented from putting to sea, for it is highly probable that quite as many losses are attributable to the one cause as to the other. When we remember that this condition of affairs invariably takes place at the very time when the greatest amount of care and caution are required for the safe navigation of the vessel, the wonder is, not that so many vessels are lost around our coasts, but that so many escape destruction.

One is almost tempted to ask what is the use of high wages to men who conduct themselves in this style. They are an advantage to crimps and waterside harpies, certainly, but for a large proportion of our seamen they simply result in so much additional drunkenness, and constitutions so much the more undermined by debauchery and disease. Of course, these remarks do not apply to the entire body of our sailors. Fortunately, there is a large class who conduct themselves as men, but at the same time there is a class almost as large who seem determined that every effort which is made for their benefit shall prove fruitless, and who

behave in a manner that would be absolutely ridiculous, were it not for the terrible consequences their folly involves.

Statements have from time to time been put forward that our merchant ships are largely manned by foreigners; but, according to table 22, which shows the proportion of foreign to British seamen employed in the merchant service, it appears that the percentage of foreigners was no more than 10·87 in the year 1873. The lowest percentage from 1851 to 1873 was 3·7, and the highest during the same period, 12·6 per cent. Of late years, the percentage has remained almost stationary, at something like 11 per cent. From these figures it is clear that the theories which are occasionally put forward for the purpose of attributing some of the darker phases of our class of merchant seamen to a large intermixture of a disreputable foreign element, are without much solid foundation. England may still take credit for the virtues of her sailors, but she certainly cannot as yet be justified in disowning their vices.

There is one more table to which we must draw our readers' attention. We refer to No. 23, which shows the proportion of men to every 100 tons, in both home and foreign trade, in 1854, and from 1869 to 1873. Taken in the aggregate, the figures in this table show that whereas 4·36 men were carried to each 100 tons in 1854, only 3·52 men were carried in 1873. The table distinguishes sailing from steam ships, and, of course, the falling off is much greater in the latter than in the former class of vessel; the decrease in the case of steam-ships being no less than 2·28 to each 100 tons. Indeed, in the case of sailing ships engaged in the home trade, there is a slight increase, 5·28 men being carried in 1873 as against 4·97 in 1854. And in sailing ships engaged in the foreign trade there is a decrease of only 1·28 men per 100 tons. Judging from these figures, it does not appear that there is much ground for the statements that are sometimes made to the effect that ships are undermanned in the present day as compared with formerly. The improvements which have been made in the rigging and general equipment of sailing vessels during the last twenty years are more than sufficient to account for the small decrease which has taken place in their crews. Of course, it is only in the larger class of vessel that these improvements have been introduced to any appreciable extent. Small coasters are fitted much in the same style now as they were twenty years since; nor could the mechanical appliances for economising labour that are to be found on board every foreign-going vessel of heavy tonnage be turned to profitable account in their case.

It is in steamers engaged in the foreign trade that the greatest reduction in the proportion of men per 100 tons is to be found. Whereas 7·69 men were carried in 1854, only 3·97 men were carried in 1873, thus showing a decrease of 3·72 men, or nearly 50 per cent. of

the entire crew. At first sight this great falling off would seem rather difficult to explain, but when we compare the steamers of to-day with those of twenty years ago, the diminution does not appear to be unwarrantably excessive. When we remember how much of the heavy work that was formerly done by hand is now performed by steam, it is not surprising that a reduction of even 50 per cent. should have been made in the crews of vessels of this description. The same power which propels the ship is now utilised in weighing the anchor, in working the pumps, in getting out the cargo, and in performing many other duties that in days gone by were done solely by manual labour. It would be wrong, therefore, to infer that this table shows a greater diminution in the crews of steam vessels than is compatible with their safe working, or that ship-owners, in their regard for economy, have failed to give sufficient attention to security.

And here we must conclude. In dealing with this return, we have confined our remarks to those statistics which we considered were likely to possess the greatest general interest, and in doing this we have been compelled to leave the greater portion of the tables untouched. In conclusion, we recommend all who are anxious to obtain full and detailed information concerning our Mercantile Marine to refer to the return itself. They will there find much that will interest them; and we may once more express our opinion that there are no annual returns which are likely to have greater importance in the future than those showing the progress of British shipping.

CORRESPONDENCE.

BELIZE, BRITISH HONDURAS.

To the Editor of the "Nautical Magazine."

SIR,—On my first voyage to Belize, British Honduras, I thought it very curious that no one seemed to know anything of the way from Half Moon Bay lighthouse to Belize Town, a distance of about 48½ miles (nautical), between dangerous reefs and banks, and that the captains seemed to give up sole charge to a negro pilot, who had all the self-assurance of his race without the requisite amount of knowledge to be implicitly trusted. It also seems strange that I have not, although I have looked often enough, been able to find any published information on this subject. Having

made thirty-six voyages to Belize in the royal mail steamer *Belize*, I had the opportunity of observing the landmarks that were necessary to clear the reefs and banks from English Bay to Belize City, and beg to hand you the following particulars, having proved their accuracy on many voyages to that part of the coast, and which will, I trust, render some service to ships sailing in those waters, by making their masters less dependent on an oftentimes ignorant negro pilot.

ENTRANCE TO GRINNELS CHANNEL (BELIZE, BRITISH HONDURAS).

The entrance to the anchorage at the Sanbour is found by bringing Goff Bay to bear N. by W., or N. by E., and English Bay W.S.W. These bearings give a good anchorage in from 6 to 7 fathoms of mud and shell.

ENTRANCE TO ENGLISH BAY.

To enter English Bay Channel, bring the bay to bear W.S.W., when so, steer W.N.W. for Water Bay spit buoy. The distance from Water Bay spit buoy to the entrance of English Channel is $1\frac{1}{2}$ mile. The mark to clear Water Bay spit is to bring English Bay to bear E.S.E., and to close Sergeants Bay on the S.E. point of Water Bay, opening the Spanish look-out channel at the same time. When clear, haul up N. by W. for the Twelve Foot Bank Buoy Reefing, Negro Head just on the point of Long Bay, until you bring Goff Bay about a cable's length from the southernmost point of Water Bay, then steer W.N.W. until you open Sergeants Bay to the north of Water Bay; these marks on, clear the Twelve Foot Bank. The buoy lies $1\frac{1}{4}$ mile from the White Bank Buoy. From Twelve Foot Bank Buoy steer S.W. $\frac{3}{4}$ S. for the White Bank Buoy; the leading mark is to bring the North Bub right over Robinson Point, and the cheque mark to open Bannisters Channel.

The White Bank Buoy lies in $2\frac{7}{8}$ fathoms. From White Bank Buoy steer W. $\frac{1}{2}$ N. for Spanish Bay Spit Buoy, commonly called Middle Rock Buoy. The mark to clear Spanish Bay Spit is to bring the South Bub over One Man Bay, and to bring Sergeants Bay on the north point of Water Bay.

Middle Rock Buoy lies in $2\frac{1}{4}$ fathoms water. The cheque mark to keep clear of Spanish Bay Spit is to close West Point Spanish Bay, Long Bay on with Spanish Bay. From the Middle Rock Buoy steer S.S.W. for the Half-way Buoy, until you open Ramson Bay to the west of Spanish Bay, then haul up gradually for the Half-way Buoy, which lies in 4 fathoms mud and coral. The course through the Half-way Channel is N.W. $\frac{1}{4}$ W. Steer that course until you open Spanish Bay to the north of Water Bay, and then stand up for Belize.

The Currents are influenced by the winds, and below English Channel are entirely regulated by the same.

The two Catholic church towers in one give mud and sand at 18 ft. 6 in., 18 ft. 9 in. The Court House staff in one with church steeple gives 14 ft. mud and sand.

I am, Sir, yours faithfully,

WILLIAM CHAS. ARMSTRONG.

10, Arundel Street, Strand.

NAVIGATION OF TORRES STRAITS.

To the Editor of the "Nautical Magazine."

SIR,—In August, 1873, I took the liberty of writing you in connection with my first passage through Torres Straits for India. As I have a great wish that some of the needless dread of Torres Straits should be taken from shipmasters who have not tried the route, I now again beg to trouble you with my second passage, showing that the navigation of that route cannot be so very difficult. I sailed from Sydney on the afternoon of June 8th, and sailed through the Coral Sea as per track on Admiralty Charts, and on the 25th June, at 1 p.m., sighted Bramble Bay, at 7 p.m. Stephen's Island, bore east four miles with a moderate monsoon and cloudy weather; stowed all small sails and put ship under topsails, jib, main-top gallant sail and spanker, and steered S.W. by S. for two hours, and S.S.W. $\frac{1}{4}$ W. other three hours until midnight, at an average speed of three knots an hour, main-yard at times braced a shiver to ease the speed; at midnight tacked and sailed to the E.N.E., dodging in the wind until 3 a.m. on the 26th, Marsden Island then bearing E. by S., and Rennel Island S.S.W. $\frac{1}{4}$ W. (the moon four hours high), we tacked and steered our course, and at 4.30 a.m. passed Rennel Island, made all sail; at noon, abreast of Nine Pin Rock, and at 4 p.m. cleared Torres Strait by the Prince of Wales Channel, this being my second time without letting go an anchor. Whole time occupied this trip, twenty-six hours, and on the first trip, thirty-one hours.

There was no risk (with proper care and precaution) in doing what I did, for the usual wind in that part of the Straits is at right angles to the course either way, so that a ship can be sailed to and fro on a fine night, and under the same circumstances I should have no hesitation in adopting the same course. For my own part I cannot see why the passage should be so dreaded, nor can I understand why 2½ per cent. extra insurance should be charged, thereby discouraging ships from taking the route. In no case, I think, should more be charged than the usual insurance for the China Sea, as I consider the navigation of Torres Straits during the S.E. monsoon, from four to six months of the year, quite as safe as, or even more than, many of the straits and

passages in the China Sea, but I certainly should recommend that the Great North-east Channel be used. There are ships now sixty-five days out from Australia, and none of the ships have arrived here that left within a month of my sailing, which makes me feel that it would be of great advantage to have the Torres Straits route more fully developed, and the veto in the shape of extra insurance put aside.

I fear I have encroached too much on your valuable space, but I must leave it entirely in your hands to cull what you think best, knowing full well that you are always ready to add anything that may tend to benefit shipmasters and the mercantile community.

I am, Sir, your most obedient servant,

WILLIAM NOTT, Master.

Berwickshire, Manila, July 21st, 1875.

P.S.—We arrived here on 16th inst., 38 days from Sydney.

HEALTH-CARDS FOR SEAMEN.

To the Editor of the "Nautical Magazine."

SIR,—As the efficiency of the crew greatly depends on the health of the seamen engaged, I would venture to draw attention to the desirability of having some record of the previous health of those who offer themselves for service at sea, and to suggest a method of making that record available.

Each seaman should be provided with what I would call a health-card—a card made of strong material—on which, at the end of every voyage, either the captain or the surgeon should note down briefly the general state of health of the seaman, and what complaint or complaints, if any, he has suffered from during the voyage; and this card should be asked for, and examined, before shipping.

Certainly in services such as the R.M.S.P., the P. and O., and others, a form of that kind should be possessed by each seaman, as it would be the means of preventing the engaging of inefficient hands, whose unfitness might escape detection during their superficial examination by the surgeon at the shipping-office, but would be immediately discovered by reference to the card, the use of which I have ventured to recommend.

I am, Sir, your obedient servant,

J. NUMA-RAT, Surgeon, R.M.S.P. Co.

R.M.S. Club, Southampton, Sept. 15, 1875.

[We agree with our correspondent that it is extremely desirable that there should be some evidence to guide masters of vessels in regard to the health of seamen whom they engage, and we very gladly print the above letter, hoping that attention may be drawn to the matter; but we

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fear that the inherent deceitfulness of many of our sailors, especially those who are diseased, would render such a plan as our correspondent proposes entirely nugatory. They would lose, forge, borrow, and exchange cards with the greatest freedom, and no dependence could possibly be placed upon them, even if the cards were produced.—ED.]

INSTRUCTIONS TO SURVEYORS.

We are often asked, as we have been frequently this month, where anybody can learn anything about the Board of Trade rules for Safety-valves, Boilers, Lifeboats, and so on. We can only recommend our readers to invest five shillings and they will obtain a reprint of all the instructions on the subject. The book, with a most exhaustive index, which saves the hunting through the pottle of hay for the needle they want, can be obtained of J. D. Potter, Admiralty Chart Agent, or of Pewtress and Co., 15, Great Queen Street, Lincoln's Inn Fields, W.C.; or of any agent of the *Nautical Magazine*. It is a capital book, well got up, and very cheap at the price.

STEAM AS A FIRE EXTINGUISHER.—A remarkable instance of the efficiency of steam as an extinguisher of fire in an enclosed space, is afforded by the report of the master of the S.S. *Petrarch*, of Liverpool, respecting an explosion that occurred on board his vessel, on the 11th July last. The *Petrarch* was bound from Genoa to Antwerp, with a cargo of sulphur, &c., and after passing Lisbon experienced very severe weather, and at 10 a.m. on the 11th July, was struck by a heavy sea, which threw her on her beam ends. A loud report was then heard from the fore-hold, and smoke was discovered arising from the ventilators and hatches. The hatches were immediately opened to ascertain the cause, and the cargo was found to be on fire. The vessel was then put before the wind, and the hose laid on, and four feet of water pumped into the hold. The fire, however, increased and finding water of no avail, the master ordered the steam pipes leading to winch to be cut, the hatches battened down, and steam turned on at high pressure from the main engine. These orders having been executed, sail was set for Belle Isle, where the vessel arrived at 8.30 a.m. on the 12th. At 6 a.m. the cargo was still found to be burning, but at 8 a.m. the fire was mastered, and the vessel then proceeded to St. Nazaire, where she arrived in safety. The master attributes the extinction of the fire and the consequent safety of the vessel, to the use of the steam jets. We respectfully recommend the above incident to the consideration of the Royal Commissioners on spontaneous combustion of coal in ships.

THE SEA FISHERIES OF IRELAND.

THE Inspectors of Irish Fisheries in their Report which has just appeared state that, by the assistance of the officers and men of the Coastguard, in addition to the Collectors of Customs, they have been enabled to present a tolerable accurate account of the vessels, and of the persons engaged in those fisheries. In the year 1874 the craft of all description numbered 7,246, and the crews 26,924. Upon a comparison with former years, and going back to 1846, a considerable decline has taken place. It appears that in 1846 there were 19,883 vessels and boats manned by 113,073 men and boys, thus showing that the vessels and boats are now reduced to nearly a third, and the crews diminished to less than a fourth. The rapid decline which took place for some years subsequent to 1846 has been attributed to the famine, the decrease has, however, gone steadily on up to the present time. Owing to emigration having taken away many of the fishermen and largely diminished the consumers, numbers of the former have been compelled to adopt other pursuits, whilst the poverty of others has rendered them unable to maintain their boats and gear in serviceable order. The inspectors since their appointment have strongly advocated the granting of loans on proper security as the only means of arresting further decline. The applications have been very numerous and out of all proportion to the real necessities of the fisheries, but they have confidence that by the exercise of due discrimination in selecting proper parties to whom to advance loans, and seeing so far as practicable that such loans are properly applied that much good will be accomplished. Amidst this present decay and therefore certain amount of suffering to the persons engaged, it is pleasing to learn that most satisfactory reports have been received from the twenty-nine divisions into which the coast is divided, with regard to the orderly conduct of the fishermen and the entire absence of conflicts between persons following different modes of fishing.

The subject of trawling has especially engaged the attention of the inspectors, who nearly two years ago obtained permission from the Admiralty to request the scientific staff of H.M.S. *Challenger* to make certain investigations so as to aid in the elucidation of some points in dispute. During the year one of the inspectors paid a visit to Cornwall, with a view of obtaining further information respecting the capture and care of pilchards, and to try if any of the persons largely engaged in the export of this fish could be induced to avail of the opening for operations offered in Ireland now that the supply is failing in Cornwall. Vast shoals of this fish frequented the coasts and bays of Cork and Kerry during 1874,

but the quantity captured as compared with what might have been taken was comparatively small. Still it is satisfactory to find that although this fish is not appreciated as it deserves to be, yet the residents along the shores are gradually getting over their prejudices, and in some localities small quantities which were cured in pickle obtained a ready sale at fairly remunerative prices. In Bantry Bay, inside Whiddy Island, numerous shoals appeared from July up to January. One of the Coast-guard officers in Kerry reports that "such quantities of pilchards have been landed this year at Kenmare that they have been carted away for manure by every person who cared to take them." It seems deplorable that the vast wealth offered by this fish for some years past has not been availed of, more especially as during some seasons, including the two last, the quantity taken in Cornwall has been insufficient to meet the foreign demand. Ireland could well have supplied it, if means had been only taken to utilize the splendid gift suffered to go to waste. Independent of the export trade that might be carried on in the cured fish, a large quantity of valuable oil might be obtained even if no other use was made of the pilchard than to press it, after which the refuse might be converted into good manure. At a very moderate calculation the County of Cork might in the last ten years have realised many thousands of pounds sterling clear profit, if proper means had been taken for the capture and utilisation of this valuable fish so prized in England and disregarded in Ireland.

The capture of herrings was greater than the previous year, although the average price was less. At Howth the capture amounted 101,405 meuse; at Ardglass, 54,576; at Arklow, 17,211; at Kilkeel, 6,220; at Greenore, 7,170. The total gross receipts for the three former places amounted to £162,554. In addition, a good deal of herrings were brought into some minor places, but as there were no means of obtaining statistics returns cannot be given. The mackerel capture was over 100,000 boxes of six score each, which was less than the former year when the capture was 120,000 boxes. There is great difficulty in obtaining anything like accurate information with regard to the quantity taken off the coast as most of the fish taken by the French vessels was cured on board and brought to France, and the quantity, which must have been very large from the size of the vessels, could not be estimated. During the year there were granted five new licences for the cultivation of oysters, making a total of 180 licensed beds, occupying 18,825 acres of foreshore and sea bottom. The amount taken on the principal natural oyster bed off Arklow was 7,520 barrels of 450 each, large and small, at prices from 18s. to 24s. 6d. per barrel; in the previous year there were 18,640 barrels taken. The only other natural banks of any magnitude are those lately the property of the Law Life Insurance Company in the County Galway. It is

difficult to obtain the amount realised annually by them, but it is believed not to exceed £3,000 worth. Carlingford, once so productive, is nearly dredged out. This year the take did not exceed a few thousand. The same tale of ruin might be told of nearly every other place in Ireland noted for oysters, the cause in every case being the same, over dredging and a succession of bad spitting years.

Nothing can contribute more to promote the fisheries than suitable harbours. The inspectors recommend that grants should be made for the improvement or construction of fishery piers or harbours at Bournapeaka, County Cork; Smeerogue or Poulally, County Galway; Mullranny, County Mayo; Kinsale, County Cork; North Harbour, Cape Clear, County Cork; Burton Port, County Donegal; Rathmullan, County Donegal; Ardglass, County Down; and Arklow, County Wicklow. Owing to the tempestuous and uncertain weather that prevails on many parts of the coast, the fishermen often dare not venture out unless they have a safe harbour to run for in the event of a storm threatening. In many instances where fishery enterprise would be much aided by the construction of harbours, the conditions, which require at least a fourth of the cost to be contributed by the locality, offers an insurmountable obstacle. Another matter which has been strongly represented to the inspectors concerning the non-existence of public marine insurance companies for insuring fishing craft, such insurance being effected in England by the owners of vessels amongst themselves; the same class in Ireland, having no such associations, labour under considerable disadvantage. The inspectors are endeavouring to assist boatowners in the formation of such associations, and they also urge, on their own behalf, the great desirability of having permanently attached to the department a cutter or steam-boat. Such would prove most useful, not only for enforcing the laws with respect to sea and salmon fisheries, but would enable them to make investigations and experiments likely to prove useful. At the time of writing, from want of a suitable vessel to convey them, they were prevented from making most necessary personal inquiries in reference to the administration of the loans in some of the western islands, and from the same cause other islands had not been visited for a considerable time.

THE PROSPECTS OF THE BRITISH MERCANTILE MARINE.

THE British sailor will very soon have a pleasant time of it. As British shipping is gradually losing its place on the ocean there will be plenty of time for him to remain in safety and comfort with Lord Shaftesbury and Mr. Plimsoll and his other so-called "friends" ashore. We hear that for rice freights merchants are now chartering foreign ships, while the British ships remain idle. It is not likely that the owner of the cargo or the merchant will use a British ship when she may at any moment be detained on complaint of a part of the crew. He wants his cargo, and must select a ship that is not dependent on a factious minority of a crew for getting to sea. If any one will take the pains to go through the docks at home, he will now see foreign flags on immense numbers of ships, that formerly carried the Red Ensign of Old England.

In the shorter timber trades British ships can no longer compete with foreigners, for the foreigner has taken the trade, which he can carry on without interruption. Another import industry is also passing from us. Numbers of British sailing ships that were till recently employed in trade with the West Coast of Africa, have been transferred and more are going. Liverpool, which was recently the seat or entrepôt of the palm oil trade, will soon be so no longer. That port will only now receive such cargoes of oil as may be brought by the large steamers. The sailing vessels are now being rapidly taken off the Liverpool trade, in order to run in future between Havre or Hamburg and the West Coast. Alterations in these foreign ports, as regards cargoes of oil carried direct, coupled with the action of Mr. Plimsoll and his friends, are the means, not only of increasing foreign shipping at our cost, but of materially increasing other foreign industries.

Italian ships are now being largely classed in Lloyd's Register, and are being rapidly chartered and pushing aside the British ship. All foreigners can come here without fear of detention. The foreigners now in many of our docks are six to one against English ships in numbers. It is, we hear, on the cards that a line of foreign steamers, wholly untrammelled by our laws, will shortly run in competition with a line very much affected by them.

Altogether, Foreign Maritime States must bless Mr. Plimsoll for transferring the carrying trade to foreign bottoms. If they are wise they will look on and by carefully facilitating the transfer of ships, reap a rich harvest through our errors. Ships are not transferred because they are unseaworthy, but to avoid unjust detention of crews and general harassment, and to escape handicapping in the competition of the world.

The recent craze does not only affect our commerce but our safety in the hour of need: and as the small ship British sailor will soon disappear, our fishing population will be our only reserves. For an instant, let us with Mr. Plimsoll assume that there are plenty of "coffin ships" owned by shipowners of "murderous tendencies" and "ship-knackers," and it follows naturally that those coffin ships will be cast away to avoid survey. Therefore the fear of survey will lead at once to loss of ships. These will not be transferred to foreign flags as they are not good enough. Bad ships will disappear to avoid survey, and good ones will go to avoid delays and detention. They are now often surveyed and certified as seaworthy before being transferred.

Humanitarians, in common with the rest of the public, must be fed, and for their supply of food they will generously and nobly rely on foreign seamen to bring it to them, who will thereby incur risks that British seamen are no longer equal to. The result is easily foreseen. If the United States Government were now to give up their protection laws, their Mercantile Marine would absorb five-eighths of ours. The Italian and German Mercantile Navies have been increasing since this insane agitation has commenced in a proportion far ahead of ours. In fact, when the British public are allowed to know anything of the immense strides those Mercantile Navies are making in comparison with ours, they will be stricken with a panic far more intense than any in our time. They do not want to know the truth now; they merely wish to be sentimental for a time.

We do not believe that one life will be saved by all that has yet been done, or by anything that can be done, in the direction of the Plimsoll remedies.

MARINE INVENTIONS.

[On receipt of a summarised description of any new invention connected with ships or navigation, the Editor of the *Nautical Magazine* will publish, under the above heading, a brief account it.]

FOG-HORNS.—N. J. HOLMES, 8, GREAT WINCHESTER STREET.—Our frontispiece represents a sailor in the act of using "Aurora" and "The Vicar of Bray," two new types of fog-horn just introduced to the public by Mr. N. J. Holmes, the inventor of the beautiful inextinguishable light. Mr. Holmes has, we hear, bought the American patent of the mechanical fog-horn, and starting on that has built up such splendid instruments as "Aurora" and the "Vicar." Aurora is really

a roarer, and the "Vicar of Bray" discourses as loudly as the most healthy Neddy. We think these horns will be a real blessing to seamen, as a ship in a fog can now, at last, by means of them, indicate to approaching vessels the tack she is on. These horns, by means of long and short sounds, furnish the means of one ship talking to another in the thickest fog by the Morse or any other code. With Sir William Mitchell's signals on board for clear weather and long range at night, and with "Aurora" on board for shorter distances and thick weather, sailing ships can hold converse. We cannot too strongly advise all ships to get these horns at once.

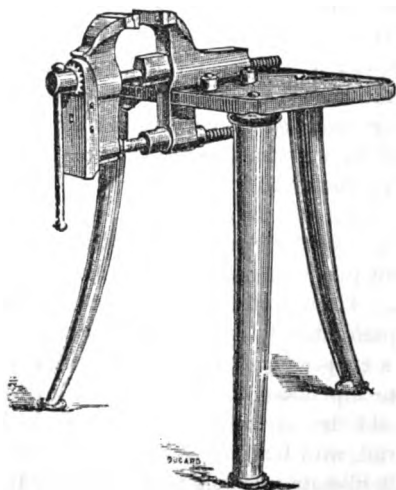
LIFE-SAVING GEAR.—Mr. Thomas Clarkson, of Hill House, Gordon Road, Queen's Road, Peckham, S.E., recently called some influential gentlemen together to witness some experiments with various boats, deck-seats, rafts, and life-buoys, fitted and built on his own plan with his patent material. The results obtained by Mr. Clarkson have satisfied the seafaring and other practical men who witnessed them that he has made a very great stride towards saving life at sea. At the back of Mr. Clarkson's house he has constructed a section of a Dutch canal, and on this canal the experiments were made. The first was with a little boat such as would be carried by a barge or a little coaster, with but few hands. This boat had a hole in her bottom, and on having a 56 lb. iron weight put into her filled and sank. In that condition she is a fair average of the boats of our coasters. She was raised and taken ashore, and in two and a-half minutes fitted with Mr. Clarkson's cases, and the hole left open as before; when again put into the water, ten weights, each of 56 lb., did not bring her down, but being put all too much on one side turned her over, when two persons stood up with ease on her bottom. By means of Mr. Clarkson's air cases an old and unseaworthy ship's boat is converted into the best of ships' lifeboats. It is very strange, seeing the perfection and complete efficiency of this method of treating ships' boats, that more enquiries are not made after the air cases of Mr. Clarkson's make. They are cheaper and are in every way better than the best of copper cases, and Mr. Clarkson states they are always passed by the Board of Trade surveyors. The next instance Mr. Clarkson displayed was that of a large whale-boat, which, with a hole in her, sinks with 75 lb. of iron. When fitted with the casings she is equal to any lifeboat for any purposes whatever. Mr. Clarkson also exhibited some deck-seats. These are long forms, rather broad, and afford comfortable space for passengers to lounge on; but in the event of emergency, three of them are placed side by side, are "skewered" together, and then form a fine safe raft capable of saving fifty people, and wholly insubmersible. It took less than five minutes with such raw hands as cork cutters and carpenters, to put the

deck-seats together and launch them as a complete raft into the canal. For pleasure seekers, the shooting punt, built by Mr. Clarkson for Mr. Baillie-Cochrane, which is either a boat, a bed-room, or a bath, as may be required, is a capital invention; it will be much sought after. The little canoe in which a sailor went out in a gale from Spithead and returned in safety elicited much admiration. We recommend our readers to pay a visit to Mr. Clarkson's factory, and see the curious and valuable things he has to show. Visitors will be surprised to see how easy it is on correct principles to convert even condemned boats into lifeboats.

TWO WAYS OF EXTINGUISHING FIRE ON BOARD SHIPS, BY DAVID CARGILL, DUNDEE.—First: Place a cast-iron vessel in the bottom or lower part of the ship, shaped to suit the place; it may be 4 feet square and 3 feet deep—no particular size. Place in this vessel about 100 lbs. weight of broken chalk, place a perforated lid on it to keep out dirt and rubbish, but not close. Lead a copper pipe 1 inch in diameter from this vessel to the deck, the pipe to dip under the top, but not to the bottom of the chalk vessel. Should fire occur, take a jug, mix in it 5 lbs. sulphuric acid or common vitriol, with ten pounds water; pour this mixture down the pipe, which will liberate carbonic acid gas from the chalk. This gas, being heavier than air, will send the air above it, find way for itself in every crevice, and extinguish the fire. Repeat the jugs of vitriol and water every five minutes for an hour; by that time there will be no fire. Fire will not burn in carbonic acid gas. Another way of making it, by mixing chalk and water together; pour this solution down the pipe, then vitriol; do this alternately, and it will raise gas to extinguish fire. This plan could be adopted should the ship take fire a second time. Second: Fit a pipe to the steam boiler 1 inch in diameter, put on it a stop valve, to be used on or reached at from deck. Lead this pipe down near bottom of hold; leave it freely open at lower end. Should fire occur, open the valve; the steam will go down the pipe, blow through, and find way for itself into every crevice and extinguish the fire, doing no damage to anything. When the fire is out, shut the valve. Copper pipe will suit better than iron, being more pliable; lead will not do, it would melt with heat. Most ships have steam; a very little will be sufficient to extinguish a fire, if led to, and confined to the place as it will be on board ships. The pipes must be fitted before the cargo is put on board. Every compartment must have its own pipe, also to the cabins, but all must be reached at from deck. These two plans can be worked together or separately, are inexpensive, ever ready, and effectual.

DUPLEX PARALLEL VICES.—**M. PICKEN & SON, MACDONALD STREET, SUMMER LANE, BIRMINGHAM.**—These vices seem well adapted for work on board ship. The peculiarity in their construction, as will be seen

from the illustration, is, that the moveable jaw is worked and supported entirely on two parallel screws working in solid boxes in the fixed jaw,



and geared together by three pinions. In most parallel vices hitherto made, the moveable jaw is supported on a slide working in the fixed jaw, and it is evident that there must be a great strain on the slide when the vice is opened the full width. Now this strain is avoided in the duplex vice, each vice opening at least twice the width of the jaw, and can be screwed up without any fear of straining any part, the bottom screw taking the pressure. There is thus no locking as in the slides of other vices. A wrong impression exists that there is a great strain on the wheels, but in reality the top screw

does the work, and the wheels have only to overcome the friction of the bottom screw. There being no projecting flanges, any long article as a long bolt can be held in a vertical position. The vice opening the width of the jaw before the thread is exposed, and being protected by the projecting bosses, the thread is thus preserved from filings and other dirt. By a method of manufacturing, the top and bottom holes in the fixed and moveable jaw are bound together perfectly parallel with each other, and tapped out of the solid, thus ensuring smoothness of action and durability. The back part that is fixed to the bench, being made flat, is useful as a steady or anvil to hammer on, and being in one solid casting, is extremely steady for chipping. The jaws are cast steel, and can be readily taken off for re-cutting, without removing the vice from the bench. The screws can be adjusted to its work by simply taking out the intermediate wheel, and moving it one tooth either way. A modification of the above is made adapted for light work, both screws being above the bench, and is suitable for work where a rotary vice is useful, and heavy chipping is not required.

SHIPBUILDING, 1875.

SAILING SHIPS.

Ports.	No. of Ships first six months.	No. of Ships added in July & August.	Gross Tonnage first six months.	Gross Ton. added in July & August.
Aberdeen ...	5	—	2,815	—
Barrow ...	5	1	4,685	1,885
Belfast ...	4	1	4,858	1,199
Bristol ...	—	—	—	—
Cowes ...	4	1	874	15
Dartmouth ...	18	4	1,568	576
Dundee ...	6	1	5,249	1,158
Faversham ...	1	—	89	—
Glasgow ...	29	14	81,267	14,561
Greenock ...	18	3	9,072	8,147
Hull ...	9	2	645	102
Jersey ...	9	8	818	286
Liverpool ...	12	5	6,747	2,662
London ...	8	6	858	2,573
Middlesbro' ...	1	—	182	—
Newcastle ...	8	8	738	1,128
Plymouth ...	7	3	1,814	382
Port Glasgow ...	9	8	9,006	8,661
Portsmouth ...	8	—	881	—
Rochester ...	6	—	282	—
Southampton ...	7	—	521	—
Stockton ...	2	1	2,594	1,126
Sunderland ...	28	9	20,684	10,685
Whitehaven ...	2	2	2,255	1,685
Workington ...	1	2	1,069	1,260
Yarmouth ...	5	7	145	661
Other Ports ...	96	37	18,077	8,982
Total	293	108	120,138	52,129

THE LOAD-LINE QUESTION.—The Associated Chambers of Commerce, at Leeds, have been discussing the load-line question, and we are glad to notice that reason has triumphed over sentiment. Our Representative was present at the discussion, and he promises us a contribution on the subject for the November number.

SHIPBUILDING, 1875.

STEAMSHIPS.

Ports.	No. of Ships first six months.		No. of Ships added in July & August.		Gross Tonnage first six months.		Gross Ton. added in July & August.	
Glasgow	52	...	16	...	50,760	...	12,267
Greenock	11	...	4	...	18,998	...	4,416
Port Glasgow	...	18	...	5	...	8,088	...	3,039
Sunderland	...	12	...	6	...	15,522	...	6,630
Newcastle	...	21	...	7	...	24,433	...	7,821
North Shields	...	5	...	2	...	3,118	...	122
South Shields	...	8	...	2	...	3,095	...	641
Liverpool	5	...	5	...	4,127	...	8,609
Dundee	6	...	2	...	3,276	...	993
Hartlepool	...	11	...	1	...	12,399	...	1,073
Aberdeen	2	...	1	...	1,857	...	643
London	9	...	5	...	4,083	...	723
Belfast	—	...	—	...	—	...	—
Stockton	...	4	...	—	...	4,832	...	—
Kirkcaldy	—	...	—	...	—	...	—
Middlesbro'	...	8	...	1	...	8,657	...	505
Hull	1	...	2	...	3,110	...	3,703
Leith	—	...	1	...	—	...	72
Bo'ness	2	...	—	...	1,841	...	—
Whitehaven	...	1	...	—	...	232	...	—
Barrow	1	...	—	...	1,025	...	—
Whitby	4	...	1	...	4,602	...	1,006
Other Ports	...	17	...	7	...	1,906	...	2,217
Total		198		68		170,406		49,507

NOTICE TO MARINERS.—VESSELS TRADING TO REUNION.—The Board of Trade, in consequence of information which they have received, deem it their duty to caution Owners and Masters of British Vessels employed in trading with Réunion, that vessels arriving in the roadstead off that place between the months of November and March incur great risks from hurricanes.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
208	ADRIATIC—Italy—Port Cervia	Intended establishment of a Light.
209	NORWAY—Christiania Fiord—Dyner Rock	Establishment of a Light.
210	ENGLAND—Yarmouth and Lowestoft	Alteration in Buoyage, &c.
211	NORTH SEA—Schelde River	Alteration in Lights and Buoys.
212	NORWAY—West Coast—Leerö	Alteration in Light.
213	NORWAY—West Coast—Oxhammer	Alteration in Light.
214	ENGLAND—Bristol Channel—Helwick Light-vessel	Establishment of a Fog-Signal.
215	WEST INDIES—Les Roques	Exhibition of Light.
216	COCHIN CHINA—Cape Ti-wan	Discovery of a Sunken Rock.

NAUTICAL NOTICES.

208.—ADRIATIC.—*Italy.—Port Cervia.*—A fixed white light, of the fourth order, will be exhibited from a lighthouse now being constructed at the site of that which formerly existed at port Cervia; it will be elevated 49 feet above the sea, and should be seen three miles. Position, lat. $44^{\circ} 16' N.$, long. $12^{\circ} 21' 9'' E.$ A temporary white light exhibited at the extremity of the palisade, to mark the entrance of the port for small vessels, and will continue to be exhibited until the new lighthouse is completed. Further particulars will be given as to the position and character of the new light.

209.—NORWAY.—*Christiania.—Dyner Rock.*—A fixed white light, of the fourth order, is now exhibited from a wooden building, painted white, at Dyner Rock. The light will be exhibited between the 15th July and 1st May, of the following year, except when the Fiord is covered with ice. The light is visible between the bearings of W. by S., through west and north to E.N.E., the former bearing leading to the southward of Erbergene, and the latter to the southward of Vasholm Fluene. It is elevated 18 feet above the sea, and should be seen eight miles. Position given, lat. $59^{\circ} 58' 40'' N.$, long. $10^{\circ} 41' 55'' E.$ In thick weather a bell will be sounded fifteen times; then be followed by a short interval.

210.—ENGLAND.—*Yarmouth and Lowestoft.*—The following alterations have been made in the positions of the undermentioned buoys in the vicinity of Yarmouth and Lowestoft, viz.:—

East Barnard Buoy has been moved one cable N.N.E., and now lies 5 fathoms with Lowestoft Mill, its length open eastward of St. John's

Church, N. by E. ; Kessingland Church, in line with the southernmost of two white houses, on the southern part of Kessingland Cliff, N.W. ; West Barnard buoy, S.W. $\frac{3}{4}$ S., 1 $\frac{1}{8}$ miles.

South Newcome Buoy has been moved 3 cables N. by E. $\frac{3}{4}$ E., and now lies in 20 feet, with Christchurch just open westward of Lowestoft harbour lighthouses, N.N.E. $\frac{1}{4}$ E. ; Southwold Church, in line with the easternmost of two houses on Covehithness, S.W. ; Kessingland lighthouse, W. $\frac{3}{4}$ N., 7 cables.

North Holm Buoy has been moved 1 $\frac{1}{2}$ cables S.S.E. $\frac{1}{4}$ E., and now lies in 4 fathoms, with Gorleston Church tower, half its breadth open eastward of Gorleston South mill, N. $\frac{1}{4}$ W. ; Corton coastguard flag-staff seen between two high chimneys at the coastguard station, W. by N. $\frac{1}{4}$ N. ; North Newcome spit buoy, S. $\frac{1}{4}$ W., 2 miles.

South Scroby Spit Buoy has been moved 2 $\frac{1}{2}$ cables N.W. by N., and now lies in 21 feet, with Lacon's brewery chimney, its length eastward of the southernmost mill at Yarmouth, N.N.W. by $\frac{1}{4}$ W. ; Hopton old church one-third from the southward, in a gap between two woods, S.W. by W. $\frac{3}{4}$ W. ; St. Nicholas light-vessel, N.W. by N., 3 cables ; North Corton buoy, S.S.W., 8 cables.

St. Nicholas Light-Vessel has been moved 2 cables N. by W. $\frac{1}{4}$ W., and now lies in 7 fathoms, with St. George's chapel, the width of the Wellington pier-head, northward of it, N.N.W. $\frac{1}{4}$ W. ; the Pilot's look-out on Gorleston South pier, in a gap between the houses on the cliff, W. by N. ; Scroby South Elbow buoy, N. by E., half a mile.

Scroby Elbow (Bell) Buoy has been moved 2 $\frac{1}{2}$ cables S. $\frac{3}{4}$ W., and now lies in 5 fathoms, with the Water Works column, the breadth of East Caistor church tower, eastward of it, N.N.W. $\frac{1}{4}$ W. ; South Town high mill in line with the silk factory chimney, W. by S. ; South Caistor buoy, N.N.W. $\frac{3}{4}$ W., 9 cables.

South Caistor Buoy has been moved 3 cables N.E. by N., and now lies in 4 $\frac{1}{2}$ fathoms, with the Water Works column in line with East Caistor church, N.N.W. $\frac{1}{4}$ W. ; St Peter's and the Roman Catholic churches at Yarmouth in line, S.W. $\frac{1}{4}$ S. ; Scroby Elbow buoy, S.S.E. $\frac{3}{4}$ E., 9 cables.

Caistor Elbow Buoy has been moved one cable N. by E. $\frac{3}{4}$ E., and now lies in 10 $\frac{1}{2}$ fathoms, with Ormesby church, open to the northward of a White barn on the cliff, N.W. $\frac{1}{4}$ N. ; St. Peter's church tower at Yarmouth, half its breadth open westward of the Roman Catholic church tower, S.W. $\frac{1}{4}$ S. ; Middle Scroby buoy, E. $\frac{3}{4}$ N., 9 cables.

Middle Caistor Buoy has been moved 2 $\frac{3}{4}$ cables N. by E. $\frac{3}{4}$ E., and now lies in 8 $\frac{1}{2}$ fathoms, with Caistor mill, the length of its vane southward of Caistor look-out, W.S.W. ; St. Peter's church, midway between the two northernmost mills at Yarmouth, S.W. by S. ; Middle Scroby buoy, S.E. $\frac{3}{4}$ E., 9 cables.

North Caistor Buoy has been moved 8 cables N.N.E. $\frac{1}{4}$ E., and now lies in $8\frac{1}{2}$ fathoms, with Hemesby church, open northward of a white gabled house at Scraby, N.W. $\frac{1}{4}$ N. ; St. Nicholas church, between the mill on the north denes and the life-boat house, S.W. by S. ; West Cockle spit buoy, N.N.W. $\frac{3}{4}$ W., one mile.

West Cockle Spit Buoy has been moved 8 cables W.S.W., and now lies in 5 fathoms, with Winterton mill, its length westward of some farm buildings, N.N.W. $\frac{1}{4}$ W. ; the silk factory chimney at Yarmouth, its length eastward of a white shed on the cliff northward of Caistor, S. by W. $\frac{1}{4}$ W. ; S.E. Cockle buoy, E. by S. $\frac{3}{4}$ S., one mile.

NOTE.—All depths given are at low water spring tides.

211.—NORTH SEA.—*Schelde River*.—The following alterations in the depths, and buoyage of De Wandelaar bank, and lighting of Schelde River, has taken place, viz. :—

(1.) *De Wandelaar Bank* at the entrance to Wielingen channel has an average depth of $8\frac{1}{2}$ to 4 fathoms, with a shoal part of 15 feet near its west end.

Buoy.—About 8 cables south-westward of this shoal part, a conical buoy painted black and red horizontal bands with staff and ball, is moored in 29 feet, with Uijtkerke church nearly in line with the West side of West Bath hotel, Blankenberghe ; Heijst church in line with Stakerdum sluices outlet ; and Blankenberghe church, bearing S.S.E. $\frac{1}{4}$ E.

(2.) *West Kapelle Light* is obscured when bearing to the westward of S.S.W. to clear Banjaard banks. Also a lighthouse is in course of erection, North of West Kapelle, from which a small light will be exhibited, as a guide to the entrance of East Gat.

(3.) *Oosterhoofd Light* has been changed from a fixed white light to a fixed red light.

Zierikzee-Val Light shows red when bearing to the eastward of N.E. $\frac{1}{4}$ E.

212.—NORWAY.—*West Coast*.—*Leerö*.—Leerö light is now eclipsed in the direction of Rongnene for a distance of one cable on either side of it ; vessels passing between Rongnene and Fladö, should keep on the limit of the light.

213.—NORWAY.—*West Coast*.—*Oxhammer*.—Oxhammer light is now eclipsed in the direction of Nyleden over an arc of 17 degrees, the western limit leads to the westward of Seilodden.

214.—ENGLAND.—*Bristol Channel*.—A powerful fog-horn has been established on board the Helwick light-vessel. In thick or foggy weather it will sound blasts of five seconds' duration at intervals of two minutes.

215.—WEST INDIES.—*Les Roques*.—In accordance with a previous notice, a light of the third order is now exhibited from a lighthouse recently erected by the Venezuelan Government on the north-east hill.

(150 feet high) of El Roque. The light is a *revolving white* light attaining its greatest brilliancy *every minute*; it is elevated 280 feet above the sea, and should be seen 18 miles. Position, lat. $11^{\circ} 58' 15''$ N., long. $66^{\circ} 38' 31''$ W.

216.—COCHIN CHINA.—*Cape Ti-wan*.—Information has been received of the existence of a rock, lying in a south-easterly direction from Cape Ti-wan, and on which the British steam vessel *Pernambuco* (drawing 15 feet) struck, on her voyage from Hong Kong to Saigon. The Rock (*Pernambuco Rock*) appeared to be about 40 feet in extent, but as the ship merely struck and passed over, no soundings were taken. It was subsequently searched for in a boat, but no bottom was found in 10 fathoms. The position assigned to the rock by the master of the *Pernambuco* is $8\frac{1}{2}$ miles S.E. by S. from Cape Ti-wan; this places the rock in lat. $10^{\circ} 19' 18''$ N., long. $107^{\circ} 16' 18''$ E.

Note.—As the position of this reported danger is uncertain, vessels should not approach Cape Ti-wan nearer than 6 miles, nor shoal the soundings in less than 11 fathoms at low water, until further particulars are known.

HYDROGRAPHIC NOTICE PUBLISHED BY THE ADMIRALTY.

No. 27.—Remarks on the navigation of Torres Strait, Arafura, Celebes and Salu seas. By Staff-Commander T. H. Figard, H.M.S. *Challenger*. 1874.

OUR OFFICIAL LOG.

CASUALTY REPORTS WR. 1 AND WR. 2.—It is the duty of Receivers of Wrecks under Section 432 of the Merchant Shipping Act, 1854, to report particulars to the Board of Trade in any of the following cases that may come to their knowledge, viz. :—

Whenever any ship is lost, abandoned, or materially damaged, on or near the coasts of the United Kingdom.

Whenever any ship causes loss or material damage to any other ship on or near such coasts.

Whenever, by reason of any casualty happening to or on board of any ship on or near such coasts, loss of life ensues.

Whenever any such loss, abandonment, damage, or casualty happens elsewhere and any competent witnesses thereof arrive or are found at any place in the United Kingdom.

(2.) Under Section 448, to examine upon oath any person belonging to any ship, which may be, or may have been, in distress on the coasts of the United Kingdom, or any other person who may be able to give any account thereof, or of the cargo or stores thereof.

(8.) Under Circular 442, and the general rules printed on each Casualty Return Wr. 1, to report all casualties whether occasioning much or little damage.

In consideration of the importance and value of the documents called for, the Board of Trade instituted a scale of remuneration to be granted in the case of depositions and casualty returns forwarded to their department; not as payment for making such reports, which it is of course the receiver's duty to make,—but as a recognition of vigilance, perfection of local arrangements, promptness of action, and general alertness displayed in taking and making these reports; also of the value of the reports when made. The Board of Trade therefore reserve to themselves the right to determine what remuneration is to be awarded in each case. Paragraph 28 of Circular 786 is now rescinded, and in future the Receiver is not to pay any remuneration for taking depositions or casualty returns until authority for such payment is forwarded from the Board of Trade. The Receiver of Wreck, Inspecting Commander, and Divisional Officer of Coastguard will as heretofore send up with the Wr. 1 or Wr. 2 a form Wr. 19 claiming remuneration in accordance with the authorised scale, and at the end of each month the receiver will transmit to the Board of Trade on Wr. 46 (new form) “*in duplicate*” a statement of the several returns taken and the amount claimed by him and the subordinate officers of Coastguard during that period. Claims for remuneration for returns taken by an Inspecting Commander or Divisional Officer either independently of or as nautical assistant to Receiver should not be included in the form sent up by the Receiver, but those officers should send up a separate form Wr. 46 for the returns taken by them. By arrangements recently made with the Admiralty, all subordinate officers of Coastguard will in future report the casualties they may hear of to the Receiver of Wreck in whose district their stations may lie, instead of as heretofore direct to the Board of Trade, or through their Inspecting Commanders. This will not only give the Receiver the earliest information respecting any wreck, but will prevent returns being sent in duplicate for the same casualty. The Receiver also will be held responsible for the return and for its being as complete as possible; and should allow the subordinate officer of Coastguard who prepared it, the whole or part of the fee, according as the form when received by him is complete and satisfactory: this point will be left to the Receiver's discretion.—T. H. Farrer, Secretary; Thomas Gray, Assistant Secretary.—*M.* 8,212. 1875.—*Circular*, No. 21.

TWO RAPID RUNS ACROSS THE ATLANTIC.—The Inman Steamship Company's steamer *City of Richmond*, Captain John M'Chlery, has arrived in the Mersey from New York, after a splendid passage. On three successive days she steamed 360 knots per diem, and on her first day from Sandy Hook 361 knots. Excellent as these performances undoubtedly were, the *Richmond* herself surpassed them on the outward voyage immediately preceding, having on the 27th and 28th of August run 384 and 386 knots respectively. The outward passage from Cork to New York was completed in 8 days 4 hours 12 minutes mean time, and the homeward voyage from New York to Cork in 8 days 4 hours 28 minutes mean time. We append the particulars:—

Outward Passage.—Aug. 19.—1.18 pm., Rock ; 5.27, South Stack ; 11.35, Tuskar. Aug. 20.—8.48 a.m., Ballycotton ; 4.33 a.m., Roche's Point in ; 4.30 p.m., Roche's Point out ; 8.41, Fastnet. Aug. 21.—Wind W.N.W., distance run from Fastnet, 210 miles ; light to fresh breeze, and head sea. Aug. 22.—Wind W. by N., distance run, 341 miles ; moderate breeze. Aug. 23.—Wind W. by N.W., N by W., distance run, 350 miles ; moderate to fresh breeze. Aug. 24.—Wind W.N.W., distance run, 346 miles ; fresh to strong breeze. Aug. 25.—Wind W.N.W. to N.N.W., distance run, 344 miles ; fresh to light breeze. Aug. 26.—Wind variable ; distance run, 356 miles ; variable, with rain. Aug. 27.—Wind N. by E., distance run, 384 miles ; light breeze and fine. Aug. 28.—Wind N.E., distance run, 386 miles ; light airs to moderate. 58 miles to Sandy Hook ; 8.51 p.m., Sandy Hook ; 4.20 quarantine.

Homeward Passage.—Sept. 4.—Wind variable. 7.57 a.m., received mails ; 8.24 a.m., left the pier, slow ; 8.39, battery, full speed ; 10.0. Sandy Hook ; 10.18, discharged pilot ; 10.38, Sandy Hook Lightship. Sept. 5.—Wind S.W. to N.W., distance run from Sandy Hook, 361 miles light breeze and fine weather throughout. Sept. 6.—Wind variable, distance run, 320 miles ; light airs. Sept. 7.—Distance run, 322 miles ; light airs and calm. Sept. 8.—Winds southerly, distance run, 331 miles ; light airs and fog at intervals. Sept. 9.—Wind S.S.W., distance run, 351 miles ; light breeze and fog, with head sea. Sept. 10.—Wind S.W. and southerly, distance run, 360 miles ; light to fresh breeze, with fog at intervals. Sept. 11.—Wind S.S.W., distance run, 160 miles ; fresh breeze, with fog at intervals. Sept. 12.—Winds S.S.W. to E.S.E., distance run, 360 miles ; fresh to light breeze, with fog at intervals. To Fastnet, 23 miles ; 1.40 p.m., Fastnet ; 5.29, stopped off Roche's Point, and discharged mails, passengers, &c., and proceeded at 6.20 (G.T.). Sept. 13.—Wind N.E. to E.S.E. ; 0.31 a.m., Tuskar ; 6.54, South Stack ; 10.27, Bell Buoy ; 11.24, Rock.—(From the *Liverpool Journal of Commerce*, September 14, 1875.)

THE
NAUTICAL MAGAZINE.

VOLUME XLIV.—No. XI.

NOVEMBER, 1875.

GOOD INTENTIONS.

THE good intentions referred to by Dr. Johnson, as forming the pavement of the infernal regions, were, no doubt, of a different description from those to which we are now desirous of drawing attention. Johnson's remark was, of course, applied to those resolutions which are constantly being made by persons who lack the determination necessary to their fulfilment. But there is a class of good intentions quite separate and distinct from these. We refer to those so often pushed forward as masks for actions which, if left to themselves, could not possibly escape condemnation. If a man be considered to be actuated by good intentions, if he declare that his ultimate designs are pure and of a lofty character, it will generally be found that a large share of the world's sympathy is accorded to him, no matter what may be the means he adopts for the attainment of the end which he is supposed to have in view.

It may be questioned whether the "good" intentions that are so frequently used in this style, for the concealment of evil actions, are not far more injurious in their effects than those to which Johnson referred. As a rule, the worst results of the latter are confined to those who indulge in them, but with the former their influence is far more widely and deeply felt.

The question whether it is justifiable to do evil in order that good may come, has been debated by moralists and casuists for centuries past. Some have held that in no case, and under no possible combination of conditions, is it allowable to leave what is accepted on all sides as the

beaten path of rectitude. Their opponents, on the other hand, have maintained that in extreme cases a certain departure from the ordinary rules of morality may be permitted. Yet these have acknowledged that this deviation is justifiable only under circumstances of the most abnormal character. To quote a well-known instance: if we met an assassin in pursuit of a man whom he wished to murder, we should do no wrong in telling a falsehood, if asked to point out the road the latter had taken. In a case of this kind all but the most unyielding supporters of the iron-bound laws of morality would allow that the lie was perfectly excusable. But it must be remembered that the staunchest advocates of this theory would not plead for moral freedom of this description, except under peculiarly extraordinary conditions—such conditions we may add as are extremely unlikely to arise in ordinary every-day life.

Yet if we may judge from events that have recently taken place in this country, it would seem that the old plea of what has been described as "a little evil for a great good," is being used pretty freely in a slightly altered shape, and is receiving the cordial support of no small section of the community. And as it is now presented to us, it appears to be far more insidious and dangerous than in its original, unmodified form. The question whether falsehood, for example, is excusable under any circumstances, has always been a moot point in by-gone days, but at the present time we are constantly seeing statements publicly made that are not merely inaccurate, but most injurious in their effects, and all under the plea of good intentions. Exaggerations and misstatements are again and again being made without one atom of pretext, and when they are shown to be groundless, we hear nothing but excuses for their authors, whom the world believes to be actuated by good intentions. It matters not what they do, nor whom they injure, it would seem, as long as they are supposed to mean well. The ordinary rules of conduct must not be applied to the vagaries in which they may choose to indulge. Persons who give way to such fancies as these, without first taking the precaution of enlisting themselves under some lofty principle, often find their careers cut short by the criminal law; but the individuals to whom we refer must be held proof even against doubtful insinuations.

We know there is every excuse for men who devote themselves heart and soul to a single object. Talleyrand's famous maxim does not find much general support in the world, and men are ever ready to look favourably on the faults of those who are giving all their energies to a praiseworthy end. But, unfortunately, the zeal of the class of reformers to whom we now refer is not of the usual harmless description, for it has been the means of inflicting serious injury upon innocent persons. Of course, the truest zeal may sometimes have this effect, but

then the men by whom it is practised generally show a certain amount of regard for those from whom they happen to differ. They generally treat them with, at least, some show of fairness and generosity. But these persons seem determined to give way to no such weakness. Having uttered their misstatements and exaggerations they abide by them in spite of every proof to the contrary. And this being the case, the question naturally suggests itself, from what does this obstinacy arise? It is hard to imagine that the understanding of any man who is allowed to be at large, can have arrived at such a low ebb as to be absolutely proof against conviction of any kind.

For a long time we have been willing to place the most favourable construction possible on the extraordinary behaviour of these zealots; but after a calm consideration of all that has taken place during the present year, we have arrived at the conclusion that their behaviour is the result of causes other than those which we had at first supposed. We cannot believe that misguided enthusiasm or well-intentioned inadvertence has led them so far astray. We observe that in their efforts to force upon the public *their* views, *their* theories, *their* remedies, they appear to have laboured rather to make the world believe that *they*, and *they only*, were right, without much regard to the ultimate truth of the matter. To this end they have unhesitatingly accused those who happen to differ from them with the blackest crimes and the most perfidious dishonesty, but when the emptiness of their charges has been demonstrated beyond a doubt, they have simply said nothing. The apology, or the withdrawal, which ought immediately to have followed, has never been uttered. The statement has been left as it was originally made; it has been neither strengthened nor revoked. Again, we ask, What can be the cause of this obstinate persistence in misrepresentation? Can it be that in order to retain their hold upon popular sympathy, they find themselves forced to prop up their originally fallacious representations and sensational statements with supports equally unsound?

It is with the utmost regret that we make these observations, and did not the matter call for the most serious consideration, we should hesitate long before offering any criticisms in this strain. It may be that all our readers will not agree with us in our conclusions; but we think all must agree that we have, at least, made a fair statement of the facts. And we ask those whose opinions differ from our own, what construction they choose to place on the conduct of men who, without a moment's consideration, scatter the most infamous charges broadcast, and who, when those charges are shown to be so many fabrications, or when they are asked for proofs, refuse either to substantiate or to withdraw their imputations. Surely it is mistaken kindness to look upon such conduct as mistaken zeal!


As regards the cause of all this agitation, we admit, and have done so all along, that there existed serious reason to move earnestly in the matter, but we must say, that whenever and whatever reform may be needed, it is to be hoped that Englishmen have not arrived at such a pitch of indifference as to require exaggerations and falsehoods to stimulate them into action. It seems to us that the question agitated is one that may easily be turned into a mine of wealth by people who work upon the superficial susceptibilities of the community, for the public generally have but a very slight acquaintance with it. *Vox populi* is not always *vox Dei*, especially in regard to technical subjects, and the utterances of a fluent orator, assisted by impassioned declamation, and startling assertions and ejaculations, will very soon enlist popular sympathy, however little the multitude comprehend the subject of discourse, and the popular voice will laud the orator to the skies. For ourselves, we must stand aside and watch the clamour without being influenced by it. Our eye must be single, always searching for truth, and whatever we may risk as regards popular opinion, it behoves us at times to tell the world what is the result of our calm judgment. In conclusion, we would urge all who take an interest in the matter to investigate the facts for themselves, and not to accept too readily the unsupported statements of popular agitators. The national love of fair-play is as strong as ever, and in justice to those whose reputations and interests are at stake, we ask for the exercise of that fair-play in judging of the value of the assertions made and the scandalous motives so freely imputed by the agitators to whom we refer. Further, in forming a judgment upon the whole question, apart from personal considerations, the British public should look well to it that they are not made fools of by agitators, who are not careful whether what they say is accurate or not. If such leaders be followed, we shall have the melancholy spectacle of the practical Briton giving the weight of his sympathy and influence to supporting mere empirical nostrums, the adoption of which will do incalculable injury to the cause he desires to aid—a cause in which the whole country is most vitally interested.

ERRATUM.

BELIZE, BRITISH HONDURAS.—With reference to the valuable communication from Mr. W. C. Armstrong, published in our last number, that gentleman asks us to correct a misprint which has inadvertently occurred. For the word "Bay," throughout Mr. Armstrong's letter, the word "Cay" should be substituted.

SOME OF THE DANGERS OF A MODERN SEA VOYAGE.

To the Editor of the "Nautical Magazine."

IR,—At this time, when public attention has been directed with such zeal and earnestness to the unnecessary dangers and sufferings incident to sea life, or even a sea voyage, when every practical means whereby the condition of our merchant seamen can be ameliorated, will, no doubt, be adopted by the Legislature, with the full support of every respectable shipowner, it has occurred to me that many of your readers would be glad to hear of other causes of danger (and how to avoid them) beside those usually spoken of and generally admitted. That some of the causes I am about to advance may be considered as mere opinions, from which others have a right to differ, is freely conceded; but they are offered for the consideration of my fellow-seamen, and all others who take an interest in the subject. Having spent thirty-five years at sea, my mind is practically familiar with most of the subjects upon which I crave your indulgent attention.

The dangers of the sea are too numerous and varied to be treated effectually in a plain short communication such as this. Some are inseparable from a sea life, while others (I may say the majority) are under control, and may be eliminated by ordinary prudence and forethought; the latter description only will be here considered.

A great advance has been made during the present century in mechanical science, especially as applied to ships, both in construction and equipment, while the size of vessels also has greatly increased—in some cases immensely so. This would lead us to expect a proportionate immunity from those casualties which befel the small weak vessels of former times; but the reverse appears to be the fact. On comparing the magnificent ships which are now employed in the foreign trade of this country, both under sail and steam, with the insignificant vessels used by Cook and his contemporaries, we must feel deeply humiliated under the conviction that security at sea has not kept pace with recent improvements.

I will first draw attention to the fact, that in the construction and equipment of ships seamen are seldom consulted. There is a mistaken theory that the propelling power of a steam ship should be in proportion to her midship section, and consequently that a great saving of expense is effected by building ships disproportionately long, quite regardless of their adaptation to the heavy seas which they are liable to encounter. Many ships have been built of iron, with the length ten times greater than the beam. Such ships must strain greatly during a gale, even under the most favourable conditions—that is, when well found and well


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handled, the engines in good order, and the sails stout and strong; but what would be the fate of such a ship, when lacking any of such advantages during a heavy gale in the Atlantic, or off Cape L'Agulhas? For instance, an engine of the highest quality is liable to derangements and accidents of various kinds which would cause a temporary cessation of power; after sail would have very little effect in keeping a long ship out of the trough of the sea, which would break over either end or waist alternately, striking parallel with her sides, sweep her decks of everything moveable and take the boats from the davits. By such violent motion she would thoroughly frustrate the endeavours of the most able engineers to rectify the defect. It would be under such circumstances that every weak part would develope itself, and even the strongest ship would be severely tried. Her cargo might shift, heavy weights break adrift, or her pipes and valves might be broken, and thus cause her to founder with all hands, which loss would be directly attributable to disproportion in construction. A very large ship, such as the *Great Eastern*, may be constructed with less regard to her power of resisting a heavy sea than a smaller one, simply because the waves will be the same size to each. Even the *Great Eastern* was very dangerously situated when she lost her rudder-head in the Atlantic, and remained wallowing helplessly in the trough of the sea; the sails, I believe, blew away like rags. The *Himalaya* is one of the most efficient troop ships under the Admiralty. She was built as a passenger ship, and looks narrow; but her length is only 7·4 times her breadth (341 and 46·14 feet); her displacement is 4,490 tons. That is quite long enough in proportion for any ship; anything beyond that may be considered excessive. The *Duke of Wellington* was a fine safe ship, under steam or sail; her displacement is 6,071 tons, and her length at the water-line exactly four times her beam only.

Supposing the shorter and well-proportioned ship to have her engines disabled during a heavy gale, as described above, her superior beam (all other things being equal) would cause her to roll less heavily, and having higher freeboard in proportion, she would rise more readily to each wave, which would otherwise break into her.

The loss of a rudder, rudder-head, or tiller, would entail the same ill consequences, unless sail fit to be set in an actual gale were available. or masts and rigging of sufficient size to make her list over somewhat permanently, in which case, by moving the engines slowly ahead, she would partially bow the sea, but the short ship much more readily than the long one. That means would not render either description of ship so easy as after trysails would with the engines stopped.

The sum and substance of the above argument is, that ships should not be disproportionately long, and that they should invariably carry storm trysails on their main and mizenmasts; the canvas being equal in

strength to the Admiralty test, which is, for No. 7, 480 lbs. on the weft, and 340 on the warp, strips 1 inch wide, length $20\frac{1}{2}$ inches clear. Of course the masts and all the gear must have proportionate strength.

The want of keel in modern ships deprives them of the requisite directive force ; they make much more leeway, therefore it is more difficult to estimate their position by dead reckoning.

The comparative ease or uneasiness of a ship will also greatly depend upon the formation of her hull under water, as well as the disposition of the weights to be carried. I have known a large steamer so flat on the floor, so narrow, and high (from keel to deck), that she would not remain upright. A heavy load of dead weight stowed too low will tend to make a ship very upright, but very uneasy ; in fact, tearing herself to pieces. At one of the Board of Trade investigations—I think upon the loss of the *London*—it was stated that the railway bars were stowed “grating fashion ;” that is, alternate bars crossing each other, which is quite right ; but the distance between the bars was not stated. It should have been at least seven times the width of a bar, clear between each ; it would then have occupied the same space as water of a similar weight. If the space in which such bars are to be stowed be not broad enough to allow them to be crossed in alternate layers, the baulks of timber should intervene between the layers, in order to produce a similar effect. Those remarks apply to all heavy weights ; the ship has not only to carry them, but she should do so without unnecessary straining. Ore is usually carried in a kind of box, erected in the central part of the vessel and well shored to the sides, which distributes the strain.

Water-tight bulkheads are usually placed in iron ships, but seldom strong enough to resist the pressure of water on either side should the compartment become filled : and the communications are frequently left open.

Another cause of danger is the custom so generally followed of fitting a ship entirely and stowing her cargo before any of the crew (the working hands) are engaged. The ship is about to leave the dock, when the crew, generally of a very inferior description, are brought on board, and frequently in such a state of intoxication, that they are worse than useless during that day, and the ship must anchor for the night. Next day the motley crew commence work reluctantly, in a thoroughly strange ship, under strange officers, and are strangers to each other. The chief officer has the unenviable task of getting them into order, not having a man that he can depend upon. Yet it is from that strange crew he must select look-out men, helmsmen, and leadsmen during the ten or twelve hours darkness of the following night ; when carelessness on the part of the two former might cause collision, while the latter would throw the lead occasionally into the water, regardless whether it reached the bottom or not, till the ship struck the ground.

During the voyage these men are amenable to discipline more in name than in reality. The punishments which can be awarded at sea are trifling, and slow in effect, compared with the serious offence of neglecting duty at an important and perilous time. The threat of stoppage of pay or even imprisonment, when all hands are in fear of being lost, would be ineffectual; nothing but the deeply-grafted habit of yielding implicit obedience will avail at such times. Generally they take care not to *refuse* obedience to a lawful command, but simply they will not exert themselves to do it, making various excuses. The laws in this respect, might, I think, be made much more stringent, enforcing discipline with great severity in cases of danger, and at the same time affording each individual of the crew ample protection from capricious or tyrannical conduct on the part of the captain or officers. As a general rule, all offences committed at sea should be punished with far greater severity than if committed on shore. There is nothing gained by furnishing a ship with a number of good boats, unless the crew be compelled to work them according to orders. On the return of each ship from her voyage the crew are discharged and scattered, having no tie whatever on the ship or the owner.

The deplorable state of inferiority in the crews of the generality of ships in the Mercantile Marine appears to be quite beyond the reach of legislation, or even the power of the individual owner, who could not afford to keep a crew in his ship in dock unless they would work as regularly and as efficiently as the stevedores and dock labourers, which at present they are not likely to do. Some great steam ship companies who have regular mail or packet service to perform, and keep their people on pay permanently, have a superior class of men who are under control in the most desirable manner, discharge being the only punishment. The want of discipline may be greatly felt with regard to fires and lights, especially in bad weather. When a fire does occur, the power which can be brought to bear upon it is usually small, the arrangements imperfect, and in many cases untried. Recent regulations may remove the latter defect. With regard to fire among the cargo, or in the coal bunkers, it may be extinguished simply by having stowed a cask of chalk at the lower part, and having arranged a small pipe through which diluted sulphuric acid can be poured into the chalk when required, the gas generated will extinguish the fire.

Perhaps the most prolific source of danger is the rivalry of competing companies, and the eagerness of all parties to save time, both in steam and sailing ships. In steam ships, the old term, "Hove to," has almost changed its meaning. It formerly implied that the ship had been placed under storm sails, in such a manner that she would slightly bow the sea, and drift nearly in the direction of the wind, receding from the

violence of each recurring wave, every endeavour being used to make the ship as easy and comfortable as possible. Now the term "Hove to," is applied to the act of working the engines slowly and putting the helm a lee, whereby she is made to meet and strike each wave with increased force, the ship straining and trembling from end to end. The rudder is often damaged by the attempt to make the ship bow the Atlantic waves, which are occasionally fully forty feet high from hollow to crest, and fall with great force upon anything which offers resistance. It is admitted that the ship which heaves to under after-storm sails, during the height of the gale, may lose twenty miles, while the one which bows the sea under steam, may be forty miles nearer to her port; a gain relatively of six hours at 10 knots. Is it worth the wear, risk, and discomfort? Neither is the tack upon which ships are placed when no longer able to keep head to sea (whether properly hove to or not) sufficiently studied, in conformity with one of the most simple rules in connection with the laws of storms, but we read of their losing boats and suffering great damage in the Atlantic, with the wind on the port side. On the starboard tack they would be much easier. In the southern hemisphere the rule is reversed.

Another danger, arising from over haste, is that of closely rounding all the corners which may lie near a ship's course, and skirting along shore, when they would be much more safe at one hundred miles from it. For instance, ships now shave close past Finisterre, Scilly, and Ushant—dangerous places, which were carefully avoided in former times. Much more is expected from ships and their masters at the present day, and often much more than is reasonable. The eagerness to gain intelligence which prompted an order to a number of steamers that they should exchange signals with the Scilly Islands, is greatly to be deplored. Again, the use of the sounding-lead, both "deep-sea" and "hand," is much neglected, especially the former; although modern inventions in that particular greatly diminish the loss of time, the trouble should not be considered. With that neglect must be coupled the unreasonable confidence which captains sometimes entertain with respect to their dead reckoning, imagining that, because they have often found their estimated position to be correct, it will always be so; thus every voyage they make is attended with increasing danger to the ship and passengers. A man who does not believe in the existence of uncertain currents should not be entrusted with the charge of a ship.

Collision is, perhaps, the most difficult and uncertain cause of disaster which we have to deal with, and can never be entirely avoided. There are positions in which ships may suddenly become visible to each other, when the clearest head may be puzzled how to act, and the "Rules of the Road" may only add to the difficulty; but such positions are rare, and

I hope to point out two or three precautions which may render them still more so. As the principal part of the difficulty arises from the ships not being seen sooner, we must employ the best eyes procurable, and take care that they are always under the most favourable conditions. The look-out man, whose special duty it is to give warning to the officer of the watch, is not at present to be trusted, especially when going from port; and when returning from a voyage, the officers of the watches are not capable of exercising that vigilance and promptitude of action which is so essentially necessary. I maintain it to be quite impossible for any man to keep every alternate watch (four hours on deck and four below, liable to interruptions) during many consecutive days and nights without feeling his brain overtaxed and muddled. He may give his bodily presence on deck from 8 p.m. till midnight, and from 4 till 8 a.m. he may be perfectly sober and not asleep, yet not possessing the same clearness of intellect which the same person would display when in the enjoyment of a natural amount of rest. In a moderate-sized ship the captain has sufficient occupation in navigating her, executing various duties, and, being liable to call at all times, he cannot be expected to keep a regular watch himself. Therefore, it appears most desirable for the safety of the ship that the officers, as regular watch keepers, should never be in less than three watches; they might then be expected to bring clear eyes and intellects on deck with them, ready to act promptly in any emergency. These remarks do not apply to the men who are allowed to lie down when the watch is not employed.

It is highly important and desirable that no light should be seen on the upper-deck of a ship at sea. It is not necessary to be a seaman in order to know from experience that after looking at a light, or being in a place with a light, the pupil of the eye adapts itself to that state, and is quite useless when taken into comparative darkness, and will not recover itself under ten minutes. Having lights visible on the upper-deck is quite a recent innovation; they are now seen through skylights, cabins, deck-houses, and various places, all dazzling the eyes of the officer in charge. The binnacle, bow, and masthead-lights, are alone necessary; they should be carefully screened. The position of the bow-lights, with regard to the masthead-light, should be definitely established by all nations, as at present some ships carry their "side-lights" on the quarter, others before the foremast. The great length of some ships also increases the risk of collision in consequence of their turning in larger circles, and in presenting longer sides to be struck. The upright stem, instead of the sloping cutwater and head-gear, increases the risk of vital injury when collision does take place, as the impact is more sudden, and lower down, with regard to both vessels.

The old practice of dropping a sail over the side, or hauling it under

the ship's bottom, in order that it may be sucked into the injured places, and at least decrease the rush of water, appears now to be entirely abandoned. In some recent cases of collision, where many lives have been lost, the whole could have been saved, and perhaps the ship also, by the immediate application of large sails thrown loosely over the side.

When considering the causes of collision, against ships or rocks, the general practice of running in a fog should take a prominent place, the great inducement to save time overcoming all suggestions of prudence. This should be strongly discouraged by all persons who can bring any influence to bear upon it. It is not sufficiently borne in mind by those in charge of screw steamers, when running in thick weather, that the accumulated effect of the propelling power of the screw cannot be quickly counteracted by working the engine astern, even at full speed, as the water from the screw is thrown against the ship, and also during that period the rudder is quite powerless.

The practice of giving up the entire charge of a ship to the pilot directly he goes on board appears very objectionable; many serious disasters have resulted. The master and chief officer should still be held responsible that the pilot shall not make obvious mistakes, and should assist him in correcting all magnetic courses for deviation, and to see that the course ordered by the pilot is actually steered. They should also assure themselves that the hand-lead is continuously and efficiently hove, whether the pilot wishes it or not. Ships that are not insured should not be compelled to employ pilots.

The chief officer should at all times be responsible, under the captain, in giving efficient and faithful assistance in the navigation of the ship. In a recent case, where a ship had been 1,200 miles out of her reckoning, the chief officer was acquitted of blame because he was not legally responsible.

The next cause of danger which I will mention, is that of a ship being decayed, either in hull or equipment, and being badly provided with necessary sails and stores: the evils thence resulting need no further comment.

The last and most inveterate source of disaster is that of over-insurance, for which I see no sure remedy, the interests of owners and underwriters being so interlaced and complicated; but it is a crying evil that so many hundred thousand pounds' worth of property should be lost to the country annually, even when no lives are lost.

One practical deduction may be taken from the above, which is, that the public have the remedy, to some extent, in their own hands; if persons sought safe ships wherein to take passages, instead of the quickest, the former quality would be less at a discount than it is at present. Quick voyages are at all times profitable to the owners, but more espe-

cially if there be a great number of passengers, therefore the inducement on that account is great, as well as the desire to gain the reputation for quickness ; the risk, if insured, being *nil*. It is desirable that a liberal allowance should be made to all mail packets for loss of time in gales or fogs ; the urgency for the rapid conveyance of letters cannot be so great now as it was before telegraph cables were stretched over the world, and the purport of all important communications anticipated, as they are, on the day they are written.

HENRY A. MORIARTY,

4, Newton Terrace, Lee, Kent,
September 9th, 1875.

Captain R.N., C.B.

THE DISPOSAL OF THE DEAD.

“ Let's talk of graves, of worms, and epitaphs.”



HE subject is not a lively one, and may at first sight appear scarcely suitable for the pages of the *Nautical Magazine*, but as sailors and their friends must all in their turn pay the inevitable debt of nature, and “ shuffle off this mortal coil,” and as the disposal of the dead is now becoming a serious social problem, fraught with grave consequences to the community at large, and in the solution of which problem sailors as well as landmen must bear their share, it may not be amiss to endeavour to treat the subject in a rational manner, and thus dispose of some of the superstitions and prejudices which at present hamper it, and stand like a lion, or rather a donkey dressed in lion's skin, in the path, impeding imperatively necessary reform. There is another point, and one that makes this subject especially of interest to the nautical community, and that is, the dread that many persons feel of sea burials. If we can only remove this dread we shall be doing good service.

Now, it must be borne in mind, that in whatever manner we dispose of our dead, whether we enclose the bodies in leaden coffins and bury them below the surface of the earth ; whether we roughly pack them up in a few planks or in a canvas wrapper and consign them to the depths of the ocean ; or whether we expose them to the destroying fire, the final result in each case is the same, though the rapidity with which this result is brought about is vastly different—the animal frame will be resolved into its ultimate elements. If we bury in the earth, it will be slowly oxidised into carbonic acid, water, ammonia, carburetted and sulphuretted

hydrogen, nitric acid, and sundry more complex gaseous products, many of them highly foetid, which escape into the air, and are finally resolved into more simple compounds, and various soluble salts which become constituents of the soil, till the bones and teeth alone remain. But not even these more solid structures remain for ever; gradually the animal basis which binds them together decomposes, and the solid structures break down into powder, which is ultimately dissolved and diffused into the soil or into the waters of the globe. Thus, in the end, every atom is dissipated, and the chances are, that these scattered atoms will many of them be gathered up again into new forms of life:—though they are separated they are indestructible; though scattered abroad, they are not destroyed. Under the influence of the sun they are built up into plants; these plants are devoured by animals; animals devour one another; man devours both plants and animals; and hence, as Huxley remarks, it is very possible that atoms which once formed an integral part of the busy brain of Julius Cæsar, may now enter into the composition of Cæsar the negro in Alabama, and of Cæsar the house dog in an English homestead. If we bury our dead in the sea, the same results are obtained, though the chances are that the process is more rapid, and that fishes perform an important part in the series of transmigrations. The process of burning, or cremation as it is called, is of all others the most expeditious, cleanly, and wholesome in its performance, and thorough in its results—carbonic acid, water and nitrogen are given off, whilst nothing but the mineral matter, or ash, weighing from 4 to 5 lbs., is left behind.

If, then, the final products are the same in each case, it would at first sight appear to be in accordance with the dictates of common sense, that the process to be adopted, should be settled upon purely sanitary considerations, but, unfortunately, sentimental nonsense puts its spoke into the wheel of this as of most other questions. It has been proved, conclusively, by a vast amount of evidence, that the practice of burying the dead is full of danger to the living, that the different gases evolved find their way into the air we breathe, and the water we drink, to the manifest deterioration of both—that the neighbourhood of churchyards is eminently unhealthy, and that there is great risk in drinking the water in the vicinity of burial grounds. The rapid growth of our population, and its tendency to congregate more and more in certain localities, will necessarily increase these dangers, till finally there is much fear that the living will be crowded out by the dead. The burying of the dead at sea has certain manifest advantages, but is not always practicable, especially for persons who die in inland places, and when we remember that the inhabitants of the deep (who are actively engaged in the transformation of animal matter) will some of them find their way and be introduced into the domestic economy of the people, a wholesale system of sea

burials would have its obvious disadvantages. We are therefore driven back to cremation, or burning, as the only alternative admitting of any comprehensive adoption. If we should, finally, have to turn to this ancient custom (and we see no other way out of the social problem before us), it is well to remember that we shall be but reviving the deliberate practices of the most civilised nations of antiquity. According to Dr. Parkes, on the site of old Darnanus, the mother of Troy, and stretching from the Hellespont for two or three miles into the hills, the whole country is honeycombed with tombs. It is the same in the neighbourhood of Troy, thus proving that our present mode of disposing of our dead—viz., by burial, was the most ancient of all, and was, in those remote times, found prejudicial to the living, and was, therefore, from necessity, superseded by burning. Hence, therefore, burial is neither more nor less heathenish than burning; and just as those ancient communities were compelled to abandon burial and to resort to burning, so in these modern times in our overcrowded and busy country, shall we have to do the same thing.

Sir Henry Thompson, who is a powerful advocate of this practice, has given full particulars of the method to be adopted, and has proved that the whole process can be completed in about fifty-five minutes, without the slightest smoke or bad smell; but we must refer our readers who wish for fuller information, to his pamphlet on the subject. He has shown, also, that whereas each funeral according to the present plan costs on an average ten pounds, a body can be burned at less than half that sum. Thus, therefore, not only on sanitary, but on economical grounds, the arguments in its favour are perfectly irresistible. It is purely on sentimental and religious grounds that the opponents have their objections. They say that it is opposed to their holiest instincts, whatever that may mean, that it will favour materialistic views, and lead to a doubt in the immortality of the soul. Now sentiment and instinct are eminently valuable if rightly guided, if they do not run in direct opposition to reason, and if not founded on mere prejudice. There is such a thing as false sentiment—there is such a thing as a wrong instinct—the instinct that urges the moth into the flame is profoundly irrational, and the instinct that would poison the living by the dead is scarcely less so. But even on purely sentimental grounds, we do not conceive that the supporters of the present system possess a monopoly of sentiment—there is some on the other side. There are some persons, to whom the thought of lying in a cold, damp grave, to slowly putrefy for years, to become the food of worms and maggots, is infinitely more revolting than the sure and cleanly method of incineration. It is very easy to talk of the imagination revolting at the idea of our friends being burnt, but let that same imagination be extended, and picture to itself these same friends, after they have lain a few

years in the grave, and become one mass of corruption, which, as Tennyson has it in *Queen Mary*, would "make even the carrion-nosed mongrel vomit with hate and horror." If "to this sad ending we must all come at last," why seek to prolong the process—why endeavour to fight against the inevitable? Nature will surely triumph in the end in spite of man's puny efforts to the contrary. We endeavour to make our coffins as impervious to the air as possible in order that the dissolution into its ultimate elements, to which in the end this earthly framework will resolve itself, shall be put off. Even if we could perfectly succeed, and carried the principle to its logical development by returning to the Egyptian practice of embalming, *cui bono*? if the ghost of the great Sesostris could revisit this earth, and view the dried-up remnants of his once pulsating earthly tenement, would not his mighty spirit burn with indignation to see himself on a shelf of the British Museum, the subject for the jokes and ridicule of a curious crowd? As to the objections raised by the Bishop of Lincoln and others, that the practice of cremation would undermine the doctrine of the resurrection* of the body, it is very much to be regretted that a number of educated men can be found in the present day so ignorant of the most elementary principles of physiology as to bring forward such an objection at all. If, as we have seen, every atom of the buried body becomes in a certain number of years diffused through the universe, and enters into and forms part of the framework of other animals and other human beings, it is surely no more difficult to some clerical, and no easier to scientific minds, to conceive of these scattered atoms being gathered together at the last day, and forming themselves into the several material bodies of which they formed part at different epochs of the earth's existence, than it is to conceive of atoms that have been scattered by the fire, or of others that have been devoured by fishes, and eaten in the form of fishes by other men doing the same thing. It is true that in all these cases there is the mathematical difficulty to be got over, that it is impossible for the same atom to form part of two or more bodies at the same time; but still it is a difficulty which applies as much to one supposition as the other, and does not much trouble some very orthodox and unreasoning minds. Why strain at a gnat and swallow a camel? We feel almost tempted to say something of the letter which killeth, but will venture no further into forbidden grounds, but merely ask the question, Did the con-

* [It is a most fatal mistake for a Bishop to admit that bodies disposed of in a certain way may possibly not rise again. If he once admits, and urges that a burnt body may possibly not rise again, he will be taking on himself the necessity of showing that bodies eaten by wild beasts, or even by worms or fishes, can rise again. We should never judge sanitary and other scientific subjects by dogma, creed, and canon, nor by sentimental imaginings.—Ed.]

suming flames that destroyed the earthly portion of the martyrs of old also destroy their souls? We cannot help thinking that many people are disposed to think too much of the clay that alone remains when the vital spark has fled. A dear friend dies; is what we now see the same friend that we knew but yesterday? Not so. The spirit that animated that frame is gone; the soul we loved, the bright intelligence, the mysterious Ego that alone made that frame worth knowing, has deserted it, and nothing but a lump of earth remains. Why seek to preserve this useless earth? Outside the dissecting-room of the School of Medicine at Trinity College, Dublin, there is a burying-ground, and we were much struck the other day at reading the remarkable inscription at the entrance of this ground: "To the memory of those who, after death, have benefitted their fellow-creatures." And we are disposed to think that it must be a greater gratification to the spirits of the philanthropic dead to know that what once belonged to them was doing some good to their kind on earth, than that worms and insects should alone reap the benefit. But so much prejudice and superstition still exists, that by many the thought of a post-mortem examination is looked upon with horror. We have met an American gentleman, who is frequently in the habit of crossing the Atlantic, and who always carries his coffin about with him, ready to receive him, and he gives as his reason that his wife made it a condition that he should do so, as she was determined he should come back to her alive or dead. With the spread of knowledge this unreasoning prejudice will disappear, and it is in the hope of hastening its disappearance that we have used plain language, and ventured to call a spade a spade.

If, however, as is evidently the case, long custom and tradition will not yet allow cremation to be favourably received in this country, at any rate let the natural end be attained in as short a space of time, and with as small an amount of inconvenience as possible. Let us set about effecting a radical reform in the ghastly mockery of funeral rites; let those harpies, the undertakers, who grow rich by trading on the sorrows of mankind, be deprived of some of their ill-gotten gains; let us do away at once and for ever with those black and dismal hearses, those nodding plumes, those streaming hatbands, and all the rest of the merely ostentatious outward, and often hypocritical, panoply of woe. Let Mr. Seymour Haden's plan of wicker-work biers be adopted, or, better still, let earth go at once to its mother-earth, as in the case of the soldier described by Wolfe—

"No useless coffin enclosed his breast,
Nor in sheet, nor in shroud we wound him;
But he lay like a warrior taking his rest,
With his martial cloak around him."

FUGITIVE SLAVES AND QUEEN'S SHIPS.

THE following correspondence has passed between the Admiralty and the British and Foreign Anti-Slavery Society on the subject of the Instructions issued by the Lords Commissioners of the Admiralty "with reference to the question how far officers in command of Her Majesty's ships are justified in receiving on board fugitive slaves who, escaping from their masters, may claim the protection of the British flag :"—

"TO THE LORDS OF THE ADMIRALTY.

"The members of the British and Foreign Anti-Slavery Society respectfully beg to convey to your lordships the expression of their profound regret that certain instructions have been issued requiring naval officers to surrender fugitive slaves to their masters.

"They submit that these instructions constitute the entire abandonment of that noble and honourable policy which has distinguished Great Britain for more than 100 years.

"Ever since the decision in the case of the slave Somerset, nobly defended by Granville Sharp, in 1772, it has always been held that a slave on British soil, or on board a British vessel of war, was absolutely free and the property of no man.

"This is the cherished opinion of the people of this country, and we should feel alarmed for the cause of humanity could we believe they would ever consent to allow the settled policy of the nation to be reversed, and fugitive slaves once on board Her Majesty's ships to be ever delivered back to the grasp of the slaveowner. 'Thou shalt not deliver unto his master the servant who is escaped from his master unto thee' was the command of God under the Old Dispensation, and, being in harmony with the spirit and principles of the New Testament, should be binding upon every Christian nation.

"In addition to all the other objections to these instructions, we cannot shut our eyes to the fact that they afford a moral support and give the direct sanction of this country to slavery.

"On all these grounds they, therefore, respectfully urge on the Lords Commissioners the immediate repeal of these obnoxious regulations.

"On behalf of the British and Foreign Anti-Slavery Society.

"We are very respectfully,

"JOSEPH COOPER, }
 "EDMUND STURGE, } Hon. Secs.
 "ROBERT ALSOP, }

"AARON BUZACOTT, Sec.

"27, New Broad Street, 20th Sept., 1875."

To this memorial the following reply was made by the Admiralty:—

“ Admiralty, 25th September, 1875.

“ Gentlemen,—I am commanded by my Lords Commissioners of the Admiralty to acknowledge the receipt of the memorial from the British and Foreign Anti-Slavery Society, dated 20th inst., in regard to the reception of fugitive slaves in Her Majesty's ships; and my lords desire me to inform you that a copy of your memorial has been transmitted to the Secretary of State for Foreign Affairs.

“ I am, Gentlemen, your obedient servant,

“ THOMAS WOLLEY.”

We give the “ Instructions ” in full:—

“ 1. Cases of this kind may be divided into three classes: where slaves come on board a ship or boat in harbour or within territorial waters either to escape from the alleged cruelty of their masters or to avoid the consequence of their misdeeds; where the British ship or boat is on the high seas and the refugee slave, escaping, perhaps, from a vessel also at sea, would be in danger of losing his life were he not received on board; where a person has been detained on shore in a state of slavery, and, escaping to a British ship or boat, claims British protection on the ground that he has been so detained contrary to Treaties existing between Great Britain and the country from the shores of which he escapes, as in the case of territories which, like Oman, Madagascar, and Johanna, are partially free.

“ 2. The broad rule to be observed is that a fugitive slave should not be permanently received on board any description of ship under the British flag unless his life would be endangered if he were not allowed to come on board. The reason for this rule is that, were it otherwise, the practical result would be, in the first instance, to encourage and assist a breach of the law of the country, and, next, to protect the person breaking that law. And a contrary rule would lead to endless disputes and difficulties with the legal masters of slaves, for it might happen, to take an extreme instance, that the whole slave portion of the crews of vessels engaged in the pearl fishery in the Persian Gulf might take refuge on board British ships, and, if free there, their masters would be entirely ruined, and the mistrust and hatred caused in their minds would be greatly prejudicial to British interests.

“ 3. Such being the general and broad rule, it remains to apply it, as far as possible, to the three classes of cases mentioned above. In the first case, the slave must not be allowed to remain on board after it has been proved to the satisfaction of the officer in command that he is legally a slave. In the second, the slave should be retained on board on the ground that on the high seas the British vessel is a part of the dominions

of the Queen, but when the vessel returns within territorial limits of the country from a vessel of which the slave has escaped he will be liable to be surrendered on demand being made, supported by necessary proofs. In the third class, a Negro might claim protection on the ground that, being by the terms of a Treaty free, he was, nevertheless, being detained as a slave. It would then become the duty of the commanding officer to satisfy himself as to the truth of this statement, and to be guided in his subsequent proceedings in regard to such person by the result of his inquiries and the law which would then affect the case. Those interested in maintaining the slavery of the person claiming his freedom should assist at the inquiry, and in the event of his claim being established, the local authorities should be requested to take steps to insure his not relapsing into slavery.

"4. As a general principle, care should be taken that slaves are not misled into the belief that they will find their liberty by getting under the British flag afloat, or induced by the presence of a British ship to leave their own ships, if at sea, or their employment, if on shore.

"5. When surrendering fugitive slaves, commanding officers should exercise their discretion in endeavouring, according to the circumstances of each case, to obtain an assurance that the slaves will not be treated with undue severity.

"6. A special report is to be made of every case of a fugitive slave seeking refuge on board one of Her Majesty's ships.

"7. The above instructions are also to be considered part of the general Slave Trade Instructions, and to be inserted at page 29 of that volume, with a heading of 'Receipt of Fugitive Slaves.'"

In reference to the above, the Right Hon. W. E. FORSTER, M.P., speaking at Bradford on the 7th October, 1875, said:—

"The main objection to the circular was the actual meaning of it, the actual order to the captains of the Navy; and he took that to be this—that if any fugitive slave escaped on account of the cruelty of his master and got on board a man-of-war—it would not be very easy for him to get on board if those instructions were carried out—but supposing he did somehow get on board, he was to be returned to his master if the ship was in slave-holding waters—that was to say, if it was within three miles of the shore of a slave-holding State, and more than that, if he got on board a Queen's ship on the open sea, and the ship returned to slave-holding waters, he was to be restored to his master. That meant this—that this circular gave up one of two things; it either gave up the principle that there could be no slave upon British territory, or it gave up the principle that the deck of a British man-of-war was British territory in any place. (Hear.) It must give up one of these two. It must be the concession of one of these two things. He did not believe it meant the

first. There was not very great clearness in the order, but he did not think it could mean the first, for he did not believe that any Government could last a day which gave up the first principle; and he believed every Government was aware that to give up the principle that there could be no slave on British territory would be a suicidal act by any Government. He therefore believed that it was the second thing that had given way, and the wording of the circular seemed to show that because it said this. In the second case—that was the case where a slave got on board a Queen's ship in the open sea—he should be retained on the ground that on the open sea the British vessel was a part of the dominions of the Queen; but when the vessel returned within the territorial limits of the country he would be liable to be surrendered, on demand being made, supported by necessary proofs. That seemed to give ground for an inference that the Government had thought it incumbent on them to give up that right which had long been claimed, that the British man-of-war was British territory. He (Mr. Forster) did not profess to be an international lawyer, but, so far as he could say from having looked into the law on the matter, it was their right which this nation had claimed for many years, which not only this nation claimed, but which other nations claimed. He thought two things—first, that if it had been given up at all it was one of the most important rights that could be conceived to be given up, and ought not to be done in this indirect way, but after full consideration; and, secondly, that we need not have taken the case of a fugitive slave as the way in which we should have surrendered this right. (Applause.) They must remember that it would apply as much to political refugees. (Hear, hear.) He was not going to weary them with extracts from International Law. He had a book there, but he did not mean to read from it; still it was his business to form a library upon these matters, and when he was in London last week he looked into his volumes on International Law, and among others 'Phillimore's Commentaries,' which he believed were considered a tolerable text-book. They were published many years ago, long before this came out, and he thought he would try and find out what was the statement in the work upon this matter. He found it almost as strong as it could be. They were aware that in 1772, when we had slavery in our own Colonies, Lord Mansfield declared in the famous case of the negro Somerset, that there should be no slave upon English soil. (Applause.) But there came this case sixty years ago. In 1815, thirty-eight slaves escaped from a cotton plantation near the River St. John's, in the Spanish province of East Florida, and took refuge on board a British man-of-war, commanded by Sir George Cockburn. Their owner and the Spanish Governor claimed them. Sir George refused to give them up. (Applause.) It so happened that their owner was a British subject, although the claim was made on

behalf of a foreign Government. He brought an action—the action was not decided—for £1,824. He (Mr. Forster) wanted to read to them the manner in which it was decided by the Chief Justice of the day—Chief Justice Best, as high a Tory, he believed, as ever lived. (Laughter.) He was afterwards made Lord Winford. Another judge that was concerned in the trial was Mr. Justice Holroyd, and he had seen one or two quotations from what he stated in giving his opinion, one of which was that the slaves ought not to be given up, because slavery broke the law of nature, and another because a ship of war was, as it were, a floating island, and, therefore, a bit of British territory. (Applause.) His book did not give him Mr. Justice Holroyd's decision, and, therefore, he did not quote from it; but here was Chief Justice Best's, who said this:—‘These men when on board an English ship have all the rights belonging to Englishmen—(hear, hear)—subject to all their liabilities. If they had committed any offence they must have been tried according to English laws. If any injury had been done to them they would have a remedy by applying to the laws of this country for redress.’ (Hear, hear.) He then goes on to say that Sir George Cockburn, if he had used force to restore them, would have been utterly without justification. He went on to say if force had been used, and one of the slaves had resisted; if a slave, acting upon his newly recovered right of freedom, had determined to vindicate that right—originally the gift of nature—(applause)—these were the words used—and had resisted force, and his death had ensued in the course of that resistance, can there be any doubt that every one who had contributed to that death would, according to our laws, have been guilty of murder? That was substantially decided by ‘Somerset's case,’ from which it is clear that such would have been the consequence had the slave been in England, and as far as this question was concerned there is no difference between an English ship and the soil of England, for are not those on board an English ship as much protected and governed by the English laws as if they stood upon English land? (Applause.) If there be any difference in this respect Somerset's case has decided the present, and certainly all persons who attempted to force them back into slavery would have been trespassers, and would have been guilty of murder. Lord Chief Justice Best and he (Mr. Forster) called special attention to this—Lord Chief Justice Best said, ‘It has been said that Sir George Cockburn might have sent them back. He certainly was not bound to receive them into his own ship in the first instance, but having done so, he could no more have forced them back into slavery than he could have committed them to the deep.’ ”

The Right Hon. the EARL OF DERBY, Secretary of State for Foreign Affairs, speaking at the Town Hall, Liverpool, on the 7th October, said :

"I am occupying too much of your time, but there is one other matter which just now is exciting a good deal of interest, and as to which it is desirable that I should say a word. I refer to those instructions lately issued from the Admiralty bearing on the question of slaves who, under various circumstances, may escape from their masters. You need not be afraid that I am going into any question which will provoke controversy. I wish simply to make a statement of fact, for which you have given me a convenient opportunity. It has been decided by the Government that those instructions shall be suspended. (Applause.) We do not admit that they bear the construction popularly put upon them, still less have we ever contemplated any change of policy in reference to the subject with which they deal. There could be no motive or inducement for any such change, and if we had meant it one of our last acts in the Session lately ended would not have been to conclude a new and more stringent treaty with the Seyyid of Zanzibar for the suppression of the Slave Trade. The statement of law contained in the document I have referred to, whether or no it embodies the popular view of our rights and obligations, is simply that which we have received on the highest legal authority; but, looking at the construction placed upon it, feeling the extreme inexpediency of exciting popular passion on a matter which requires careful handling, and considering that the question dealt with is not one requiring urgent haste, we think it better to cancel what has been done, so that the whole question may be considered *de novo*, and that any future discussion upon it may not be prejudiced. This is not the time and place for detailed explanations, and probably you will think I have said enough for the moment." (Cheers.)

The Right Hon. Sir STAFFORD NORTHCOTE, M.P., Chancellor of the Exchequer, speaking at Middlesbrough, on the 7th October, said:—

"In English history there is no page so glorious, no page so little sullied by a suspicion of ambiguous motives, as the history of the dealings of England with slavery. It was, therefore, with a feeling of astonishment that upon coming back to England a few days ago I heard of rumours and articles written in newspapers, and even of public meetings being held to call Government to account for some imputed lapse from the national policy respecting slavery. I can only say that so far as I was concerned it was an entire surprise to me, for I had heard nothing of this famous instruction about which so much has been said. (Loud cheers.) It is only within the last two days that I received a copy of the instructions, and I must candidly confess that at present I am not very fully informed of the motives which led to their being issued. I can form conjectures, but I abstain from doing so. Of two things, however, I am certain; the first is, that in framing these instructions, whoever is responsible for them, there was no idea whatever of introducing any change

either in principle or practice in the established policy of Great Britain with regard to slavery. (Hear, hear.) That is the first thing of which I am convinced. The second is something very different. It is that any one reading these instructions without sufficient explanation, or knowing the necessity or reason for them, would naturally suppose that there was something in contemplation. Now, I feel that this is a matter on which it is absolutely necessary that Great Britain should be unsuspected. It is a matter of far too much importance to be left in doubt, and I am sure that in this I am expressing not only my individual opinions, but the opinions of my colleagues also. (Hear.) I must tell you that since I have been in Middlesbrough, I have received a communication that the circular has been suspended. (Great cheering.) I will venture to say too that England will take every care that no proceedings are taken which can in any degree throw doubt upon the maintenance of that which is the proudest boast of our nation and of our policy."

[We publish the above as a record, and now that the circular has been cancelled we hope that no more will be heard of the matter.]

OUR REPRESENTATIVE AT LEEDS.

To the Editor of the "Nautical Magazine."

IT is some time, Sir, since I had the honour of addressing you, but as you have not specially called upon me to represent you on any recent occasion, and my time having been much taken up with other duties, the cause of my silence will be understood by both your readers and yourself. On the 21st and 22nd September, however, I had the honour and pleasure of attending, as your Representative, the annual meeting of the Associated Chambers of Commerce at Leeds. It may be said that this annual gathering is full of interest, but the gentlemen delegated by the various Chambers in the country to associate annually, and to express opinions on different subjects, being mostly connected with commercial pursuits, the discussions are to a great extent flavoured with trade and finance, and it may be said, therefore, that the commercial interest preponderates. In addition to the various delegates I observed several of our legislators, who were probably present with the object of feeling the pulse of the trading community.

It is my humble opinion, Mr. Editor, that in commenting upon the utterances and doings of any assembly, it is well first to understand how that assembly is constituted, and that is the reason why I venture to point out in a general way the people of whose proceedings I now pro-

pose to inform you. On Tuesday morning, the 21st September, we met in the Theatre of the Philosophical Hall at Leeds, a goodly array of busy-looking gentlemen, all more or less furnished with pens, ink, paper, and important-looking documents, and all, I may add, deeply impressed with the weighty responsibility which rested upon each one of us. Mr. Sampson Lloyd, M.P., was the President of the Associated Gathering, and acted throughout in a most efficient and judicious manner. It may perhaps be considered somewhat presumptuous on my part to associate myself with the associated delegates, especially as I was not there to enter into any discussion, but simply to watch the proceedings on your behalf. But, Sir, in order to form a right judgment, I fell in with the spirit of the assembly, and followed with genuine interest the deliberations of the meeting on the numerous questions brought forward. Before each of us was an official programme of the various matters to be debated, stating from which Chamber each one emanated, and the terms of the resolution to be proposed. I shall not trouble you, Sir, nor your readers, with an enumeration of all the proposed resolutions set down for debate, but shall confine myself to maritime matters only.

The first question in which your readers and yourself will be interested, was introduced by the Bradford Chamber of Commerce on the subject of a Minister of Commerce, and the following resolution was proposed :—

“That this Association deems it desirable to renew the application, and again to urge upon Her Majesty's Government the necessity of the interests of trade and commerce being placed in charge of a separate department of the Government, presided over by a Cabinet Minister.”

Mr. Behrens, of Bradford, made a very sensible speech in moving this resolution. This gentleman alluded to the existence of the Board of Trade, which, from its name, might be supposed to deal specially with commercial matters, but as a matter of fact in the constitution of that Department “there is no Board and there is no Trade at Whitehall Gardens.” I must say, Sir, Mr. Behrens made out a strong case, and after being seconded in his motion by Mr. Groves, of Hartlepool, some very judicious observations by the President of the meeting (Mr. Sampson Lloyd, M.P.), had the effect of carrying the resolution. I need not trouble you with further details, because only three people spoke, and the whole substance of what was said is contained in the resolution.

The Bristol Chamber of Commerce proposed the following resolution :—

“That this Association regards with much satisfaction the growth of conviction in favour of affixing a definite load-line to every seagoing ship; but views with apprehension, as prejudicial to the interests of life and property, as well as to those of the shipowner, the absence of any provision for the proper calculation of such load-line in the Act so hastily passed at the close of the last Session of Parliament.”

"That this Association, therefore, resolves to petition Parliament, praying it to legislate in favour of determining the load-line of each ship, on the basis of reserving above the line of immersion a certain proportion of the total external displacement of her hull proper; the amount of such reserve to be governed by the strength and quality, as well as the employment of the ship.

"That, in the opinion of this Association, in the case of all ships classed in 'Lloyd's Register of Shipping,' the strength and quality of the ship should be estimated as being adequately represented by the class assigned her in the registry book of that society.

"That every ship so surveyed and classed, and not immersed below such legalised load-line, should be free from all interference on the part of the Board of Trade surveyors, or otherwise, so far as the question of seaworthiness in hull or lading is concerned; provided always that the ship be not engaged in any description of trade or employment other than her certificate of class declares her to be fitted for."

Mr. Evans, who moved the above resolution, made a long speech, and reiterated, with wearying pertinacity, the old worn-out arguments in favour of compulsory classification and load-line, which you, Sir, have for so long a time vigorously combated. A diagram was exhibited to show that a trustworthy load-line, calculated upon the surplus buoyancy of any ship could be made available, and made many of us laugh, because the gentleman never took into consideration the different ways in which cargo is stowed. Mr. Evans dwelt so long upon the subject of surplus buoyancy, that I could not help remarking to a friendly delegate seated next to me (and I trust, Sir, you will not be offended if I intrude a small pleasantry in your serious pages), that the gentleman appeared to be suffering from surplus buoyancy in his head. The gentleman was eloquent, and dwelt feelingly upon the enormous loss of life at sea; he struggled gallantly with some figures he had brought with him, but I am sure I speak truly when I say that nobody knew what he wanted those figures to show, and as far as I could gather, he was himself doubtful of their import. However, he concluded by very kindly stating that he did not think the shipowners of this country were either murderers, thieves, or villains. After this graceful tribute to the character of the shipowning community, Mr. Evans sat down, and his motion was seconded without a speech by Mr. Turnbull, of North Shields. Then up rose Mr. Clapham, of Newcastle, and created some sensation by a patriotic allusion to Britannia ruling the waves. He said that as a shipowner—mark this, Mr. Editor—as a shipowner, he had the greatest satisfaction in supporting the resolutions, and that the present position of affairs was quite unbearable to every honest shipowner. Mr. Plummer, of Newcastle, also spoke in favour of the resolutions, and I was beginning to fear that no voice was to be raised on the

other side. It seemed to me, Sir, that there existed a sort of coalition among the Bristol folks and the Tyne delegates, they being seated all together, and frequently in confidential communication. Colonel Hill, of Cardiff, made a vigorous speech, vindicating the character of the ship-owners as a body, and although to a certain extent he seemed to support the Bristol resolutions, yet he considered it impossible in such an assembly to arrive at any kind of decision. But, Sir, having been for some years one of your disciples in regard to merchant shipping legislation, I was indeed gratified to hear Mr. Livingstone, of Swansea, boldly say that by these resolutions they were simply asking the Government to relieve the ship-owners of all responsibility, and that he was perfectly satisfied that the Government would do what was right between the seamen and the ship-owners, without any representations from this meeting. The tone of this gentleman's speech was so manly, straightforward, and to the point, that he was listened to with the greatest attention, and the contrast was very marked between his bold utterances and the bald diletantism of Mr. C. M. Palmer, M.P., who followed. This legislator talked for some little time in a feeble and inoffensive manner, and I do not suppose he influenced any member of the assembly one way or the other. Small talk now went on for a short time, in the course of which Mr. Whitwell, M.P. for Kendal, an elderly and somewhat prosy legislator, expressed himself in favour of a compulsory load-line. Then the Bristol school tried again with Mr. Townend, and this gentleman's remarks had a true trade ring about them. He finished a short speech by saying, "Surely shipowners if they got a just and equitable arrangement, should be rather thankful that the responsibility was taken from their shoulders." Oh-ho! Mr. Townend, does the cloven foot peep out? After all, then, it is not in the sacred cause of humanity, nor in the interest of the poor suffering sailor that you advocate Government supervision, but in order that the shipowner may have the responsibility taken off his shoulders. Oh! Mr. T., where are your high principles, and what have you done with the lofty sentiment of the humanitarian school? After this, more desultory conversation followed, and then Mr. Harper, of Southampton, with no uncertain utterance, made a very vigorous attack upon the proposed resolutions. This gentlemen, I must say, talked just like the *Nautical Magazine*, and I assure you, Sir, he met with a very warm reception. He exposed "Plimsolecisms;" he ridiculed hard and fast load-lines; he vindicated the shipowners in regard to the calumnies which had been spread abroad; and he wound up a courageous speech by saying in direct opposition to what Mr. Townend of Bristol had said, that shipowners should not be relieved by Government of a responsibility in their own business which they were perfectly ready and able to bear. Sir, I believe this speech turned the scale completely against Bristol and its supporters, for on the

question being put, the Assembly negatived the resolutions of the Bristol Chamber by 27 against 8. You can imagine, Sir, after this expression of opinion, what an effect was produced by a simple-minded gentleman rising and stating that, without wishing to re-open the question, he had been somewhat pained to notice that the bias of the discussion seemed to be favourable to the shipowners. All he wanted now to do was simply to obtain an expression in favour of Mr. Plimsoll. The poor gentleman was met by a perfect storm of laughter, insomuch that he sat down precipitately, covered with confusion.

It is a great pleasure to me to chronicle this common-sense decision in the rejection of proposals for Government interference. It is a hopeful sign that reason is about to resume its sway now that the tempest of popular sentiment has somewhat abated, and, Sir, I venture to offer you my congratulations at the result of this discussion.

The next maritime question brought forward was in regard to the present anomalous operation of some of the clauses in the Passengers' Acts, and on behalf of the Southampton Chamber of Commerce the following resolution was moved :—

“That the laws relating to the carriage of passengers by sea require attention, in order to adapt them to existing circumstances, and that representations be made by memorial, or otherwise, to Her Majesty's Government to amend the Passengers' Acts, 1855 and 1863, or else to repeal these Acts and incorporate in the Merchant Shipping Bill, promised next session, such clauses as may be necessary for the due protection of passengers.”

Mr. Dunlop, of Southampton, made a very plain and practical speech, and pointed out clearly that some grievous anomalies do exist. The meeting was evidently not disposed or not able to question Mr. Dunlop's statements ; indeed, Sir, between you and me, I think that very few of the associated delegates knew anything about the matter, so that when the resolutions were seconded by Mr. Plummer, of Newcastle, nobody opposed it, and it was unanimously carried. As far as my opinion goes, I would venture to say that Mr. Dunlop and the Southampton Chamber have called attention to a real inconvenience which I hope may be remedied when a new Merchant Shipping Act is passed, and I trust, Sir, this remark may be noticed by the officials whose duty it is to prepare the Bill.

Mr. Plummer, of Newcastle, then proposed the following resolutions in regard to the Suez Canal dues :—

“That in consequence of the persistent efforts made by M. de Lesseps on behalf of the Suez Canal Company to obtain from the Turkish Government further modifications of the original concession, other than those already granted by the International Commission that sat at Constanti-

nople in 1878, it is resolved—‘ That this Association, believing the terms granted by the International Commission to be exceedingly favourable to the Canal Company, memorialize Earl Derby, praying that Her Majesty’s Government will withhold their consent to any further modification of the original concession of a nature that may be adverse to the interests of British Commerce.’ ”

Mr. Plummer’s speech in support of his motion went to show that M. de Lesseps was trying his best to obtain for the Canal Company a larger revenue by increasing the Canal dues, whereas the present condition of the Company’s funds would seem rather to indicate that the shipowner would be justified in asking the Company for some reduction in the dues. Very few of the assembled delegates listened with any attention to Mr. Plummer; the subject was unfamiliar and uninteresting, but nevertheless they accorded him their unanimous support, and accordingly Lord Derby will be duly memorialised. It does seem that the demands of the Canal Company deserve to be resisted. Of late years, what with their disputes about tonnage capacity and measurement, and their manifest desire to raise more money, the shipowner has been somewhat worried by the Company, and if it is true after all, that they have plenty of funds and are making large profits, the action of M. de Lesseps ought to be resisted, and the Newcastle Chamber of Commerce deserve the thanks of the shipping interest for bringing the matter forward. That is all I have to say upon this question.

The next proposed resolution also came from Newcastle, but was introduced by Mr. Clapham of the Bristol coalition. The motion was concerning lighthouse management, worded as follows :—

“ That this Association is of opinion that the sum levied for lighthouse purposes is excessive, and that the system of entrusting the expenditure thereof to the Trinity House and other similar Corporations is altogether unsatisfactory. That memorials expressive of the above opinion be presented to the Lords of the Treasury and to the President of the Board of Trade.”

Mr. Clapham began with a violent attack upon the Trinity House, its expenditure, its management, its *raison d’etre*, and would have made it appear that the Trinity Board was a vile old Corporation which only cumbered the ground. Mr. Clapham is an arch gentleman, and deals largely in those tricks of eloquence by which the hearer is led to suppose a great deal more than is actually uttered. Solemn shakes of the head, mysterious closings of the eye, insinuating suggestions as to this and that were all freely used, but these were not of much consequence in themselves, they served only as aids to a dull speaker. The gentleman also made some alarming statements as to the expenditure of money by this naughty Corporation, statements mostly founded upon hearsay evidence,

such as no doubt the shallow-thoughted Bristol faction are perfectly contented with. It turned out after all that what the Newcastle Chamber of Commerce wanted was the abolition of light dues, and their spokesman believed that the best means of bringing that about was to fling mud at the Department which maintains the lighthouses and collects light dues from shipowners. It was not after all a just and virtuous indignation against excessive expenditure or mismanagement by which the mover of the resolution was actuated; the allegations, exaggerations, and insinuations were simply means to an end by which the shipowner might be relieved from paying light duties. Well, Mr. Editor, I can only say that if instead of disguising himself as a would-be economist, the gentleman had but submitted the plain question of abolition of light dues for discussion, he would have been much better received. I assure you, Sir, that by his personal attack upon the Trinity House, an institution honoured as much for its present usefulness as for its antiquity, he damaged his own cause, and he sat down in the face of an entirely unsympathetic audience. Mr. Evans, of Bristol (ex-load-line advocate), quietly seconded Mr. Clapham's proposed resolution. After this Colonel Hill, of Cardiff, rose up and walked into Mr. Clapham in fine style, pointing out some very serious misstatements made by that gentleman, showed that the Board of Trade have entire control of the Trinity House expenditure, that our system of lighthouses is the best in the world, and that if it is rather costly it is splendidly efficient; that a cheap and nasty system would imperil many seamen's lives, and also that the question of abolition of light dues was entirely distinct from the question of management of the lights, and was not to be helped on by such unfounded attacks. Mr. Dunlop, of Southampton, spoke in the same strain, and moved as an amendment to the motion proposed, "That the Association re-affirms its opinion that light dues on shipping should be abolished, and that memorials expressive of the above opinion be presented to the Lords of the Treasury and to the President of the Board of Trade," thus dealing in a straightforward manner with the real question. Mr. Clapham was called upon to reply, but although he asserted he could answer all that Colonel Hill had stated, he could not stay to do so, and asked leave to withdraw his motion. This the meeting would not permit, but proceeded to vote upon the amendment, the result being that Mr. Clapham's resolution was negatived by 26 against 4.


I think, Sir, that the principles by which the Bristol delegates appear to be actuated, savour very much of protection, narrowmindedness and sentimentality; I am sure that Mr. Plimsoll would embrace those gentlemen very affectionately, and I doubt not that they would mingle their tears together on any given subject. But, Sir, I will say, that on the whole, the Associated Meeting of the Chambers of Commerce really represents

important interests, and their expressions of opinion on many matters is as useful to the Government as it is to themselves. There is a collective wisdom about them which prevents their being misled to any extent by gentlemen with crotchets, and out of their deliberations is generally evolved a wholesome proportion of common sense and fairness, which obtains for their representations a respectful attention from those to whom they are made. I trust they may long continue to avoid being led by one-horse delegates, and their strength will be in the unity of their common sense. This is all regarding this interesting meeting, which I have the honour to communicate to you, Sir, as

YOUR REPRESENTATIVE.

RULES OF THUMB FOR SHIPS NAVIGATING COASTWISE.

No. III.

HORT distances afloat may be measured by knowing the height of eye above the water when standing on a steamer's bridge or other elevation. By making use of the angle of depression between the *water-line* of an object and the horizon, without any reference to tables, by calculating a constant for your height of eye above the water, which can then be used as a table of heights and distances.

The rule for getting the constant is—

Multiply the given height of eye by 18 and divide by 23, and the quotient will be the required constant; or you may get a constant by inspection from the Traverse Tables at 10° where the Dep. represents the height in feet, and D Lat. is the constant for that height in cables or tenths of a mile, or by shifting the decimal point of D Lat. one place to the left, it will be the constant in nautical miles and decimal parts of a mile.

Another close approximation for mental calculation is to multiply by 4 and divide by 7.

Having the above constant, proceed as follows:—Take an angle between the *water-line* of object and the horizon, to which add the Dip. for your height of eye, and divide the constant by the sum of these two in minutes, and it will give you the distance of object.

If a shore line prevent getting a true horizon, use the shore dip for

your estimated distance from the shore, instead of the dip for sea horizon.

Example 1.—Being on a steamer bridge where the height of my eye above the water was 17 feet, I took an angle between the *water-line* of a buoy and the horizon, and found it to be $20'$, required my distance from the buoy?

The constant for 17 feet $= 17 \times 13 \div 28 = 9.61$, or by inspection from the Traverse Tables at 10° . Dep. 17 gives 96.5 (in tenths of a mile), or 9.65 in miles, by shifting the decimal point one place to the left. Then $20' + 4' \text{ Dip} = 24' \div 9.6 = .4$ of a mile, or 4 cables.

Again, **Example 2.**—I observed the angle between the *water-line* of a buoy and the horizon to be $1^\circ 48'$, required my distance from the buoy?

$1^\circ 48' + 4' \text{ Dip} = 1^\circ 52' = 112' \div 9.61 = .085$ of a mile, or about 85 fathoms.

A guess warp and kedge might be laid at any required distance by a reverse application of the rule.

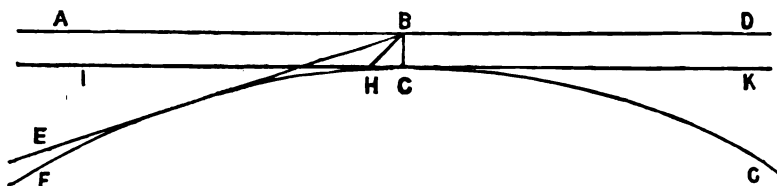
Example :—Wishing to lay out a kedge and guess warp against the tide, 80 fathoms distant, I ordered the boat to pull away in the right direction, and when it was 80 fathoms distant, by angle (between the *water-line* of boat and the horizon) from the bridge, I signalled them to drop the kedge—in this case my eye being 17 feet above the water, the constant will be 9.61, which $\div .08$ (or 80 fathoms) will give $120' - 4' \text{ Dip} = 116' = 1^\circ 56'$, the angle required to place on the sextant.

Also, you can ascertain the diameter of the circle your vessel makes with your helm hard over, by dropping overboard a piece of wood (slightly loaded at one end) to represent a buoy at your starting point, and taking the angle between its *water-line* and the horizon when it comes again abeam.

Example.—Height of eye 17 feet, I put the helm hard a starboard, and dropped a small buoy alongside on the port side, and when it came again on my beam, having completed a half circle, I observed the angle between the *water-line* of the buoy and the horizon to be $1^\circ 12'$, required the diameter of the circle made?

$1^\circ 12' + 4' \text{ Dip} = 1^\circ 16' = 76' \div 9.61 \text{ constant} = .126$ of a mile, or about 126 fathoms.

To be accurate, stand amidships to avoid the error of height of eye if the vessel has a list, also in this case add the half beam of the vessel to get the diameter of the circle made by the keel; if the buoy had been dropped on the starboard side the half beam would have had to be subtracted. If the helm had been put hard a port, of course the case would have been just the reverse.



This rule is easily seen from the figure. FCG , represents part of the curved surface of the earth, BC the elevation of observer, ABE the Dip. Then $\angle ABE + EBH$, the angle between the water-line of object and the horizon, $= ABH$, will, for such a short distance, be equal to $\angle BHC$, the angle of elevation for which the constant is calculated.

These constants can also be used for the angle of elevation if you know the height of an object.

Example 1.—The height of the lantern at the South Foreland low lighthouse is given in the Admiralty list of lights as 275 feet above the sea; on passing it I observed the \angle of elevation of the lantern above the water to be $2^\circ 5'$, required my distance from it?

Constant for $275 \times 18 \div 23 = 155$, and $2^\circ 5' = 125' \div 155 = 1.24$ miles, the required distance.

Example 2.—Coming round the North Foreland from the Thames, and not seeing the Elbow buoy which lays 2.4 miles from the lighthouse, and wishing to pass half-a-mile eastward of the buoy, or, say 3 miles from the lighthouse, I find the height of lantern at the lighthouse is 188 feet above the water, the constant for which will be $188 \times 18 \div 23 = 106$ constant, which $\div 3$ miles $= 35'$ to get on sextant, which will carry me 3 miles from the lighthouse, and half-a-mile eastward of the buoy and shoal.

This is a reverse application to the first example.

If a constant for each lighthouse were marked in the published list of lighthouses, their distances could be readily got on passing them at a moderate distance.

It is also handy to make out a table from the constant you use for your own height above the water in using the angle of depression. I also append a Table of Constants for heights up to 100 feet, which may be useful to some persons; if a number above 100 is required, add any two given numbers together that will make the required number, and the sum of their constants will give the required constant; or multiply the number of feet and its constant by any figure that will produce the required number.

Yarmouth, October, 1875.

T. E.

A TABLE OF CONSTANTS FOR DIFFERENT HEIGHTS.

Feet.	Constants Naut. Miles.	Feet.	Constants Naut. Miles.	Feet.	Constants Naut. Miles.	Feet.	Constants Naut. Miles.
1	0.565	26	14.696	51	28.826	76	42.956
2	1.180	27	15.261	52	29.391	77	43.522
3	1.696	28	15.826	53	29.956	78	44.087
4	2.261	29	16.391	54	30.522	79	44.652
5	2.826	30	16.956	55	31.087	80	45.217
6	3.391	31	17.522	56	31.652	81	45.783
7	3.956	32	18.087	57	32.217	82	46.348
8	4.522	33	18.652	58	32.783	83	46.913
9	5.087	34	19.217	59	33.348	84	47.478
10	5.652	35	19.783	60	33.913	85	48.043
11	6.217	36	20.348	61	34.478	86	48.609
12	6.783	37	20.913	62	35.043	87	49.174
13	7.348	38	21.478	63	35.609	88	49.739
14	7.913	39	22.043	64	36.174	89	50.304
15	8.478	40	22.609	65	36.739	90	50.870
16	9.043	41	23.174	66	37.304	91	51.435
17	9.609	42	23.739	67	37.870	92	52.000
18	10.174	43	24.304	68	38.435	93	52.565
19	10.739	44	24.870	69	39.000	94	53.130
20	11.304	45	25.435	70	39.565	95	53.696
21	11.870	46	26.000	71	40.130	96	54.261
22	12.435	47	26.565	72	40.696	97	54.826
23	13.000	48	27.130	73	41.261	98	55.391
24	13.565	49	27.696	74	41.826	99	55.956
25	14.130	50	28.261	75	42.391	100	56.522

This table is constructed similar to Raper's Table 9, except that this is calculated to whole feet. The first number shows that 1 foot will subtend an angle of 1 minute at 0.565 of a nautical mile, and all the others are in like proportion.

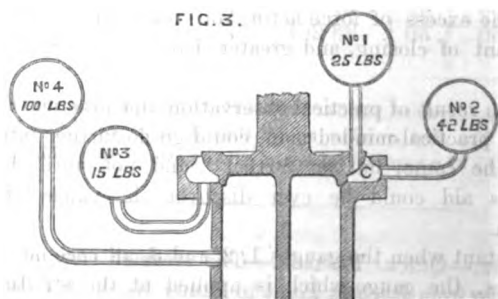
INMAN LINE.—QUICK PASSAGE.—The steamer *City of Berlin* made her last passage from Roche's Point to Sandy Hook in 7 days, 18 hours, and 2 minutes, mean time; and from Sandy Hook to Queenstown in 7 days, 15 hours, and 28 minutes, mean time. Her best day's run out was 381 miles, and her best day's run home was 388 miles. The owners claim this as being the fastest run out and home ever made across the Atlantic. The builders of the vessel are the Messrs. Caird, of Greenock.

DIRECT-ACTING SPRING SAFETY-VALVES.

THE reader in the *Nautical Magazine* for September, in going over the article on Spring Safety-Valves, will have no difficulty whatever in seeing from the formation of the valve and its concentric chamber around the head thereof, that the valve will lift well from its seat, and allow the steam to flow copiously from the boiler, by reason of the increased area on which the steam acts after it passes the seating orifice. But when he examines the "Table of Performances," and sees the rapidity with which the valve returns to its seat, he will then encounter the difficulty; and when I tell him that in order to obtain such a performance, the law of gravity must be reversed, that the force acting on the lower side of the valve at the instant when it closes is greater by two or three hundred weight than that which first raised it from its seat, he will probably stand aghast, and display the character of misbelieving "Thomas." But his unbelief will not now alter the fact accomplished, for thirteen hundred valves now on board ship (every time they rise from their seat to relieve the boiler) all cry out with one accord, "It is true!" and close again, faithful to the task assigned them.

ON THE BEHAVIOUR OF THE STEAM IN THE CONCENTRIC CHAMBER C.

Let Fig. 3 be a valve applied to a boiler loaded to 100 lbs. per \square ", and



with which gauge No. 4 is in direct communication. Let gauge No. 3 be applied to the lower side of the chamber, No. 2 in the neck, and No. 1 on the surface of the valve. On the instant of No. 4 showing 100 lbs., the valve will rise from its seat, and the escaping steam will register on the gauges applied to the chamber C the respective pressures 25, 42, and 15 lbs.; gradually will all those pressures fall until, when about 12 lbs.,

the three gauges Nos. 1, 2, and 3 all become alike, and instantly the valve falls to its seat, and No. 4 gauge will be about 99 lbs.; and the time occupied in making this change varies from 10 to 40 seconds, according to the size of valve, a 3" valve doing it in 10 and a 5" doing it in 40 seconds. But if a gauge be fitted to the stricture orifice, which is the orifice leading from the chamber C into the waste-pipe, and at right angles to the path of the escaping steam, then that gauge shows a line of no pressure, or an atmospheric line, at the instant when the valve closes; and if the stem of the pipe on No. 3 gauge be carried through the chamber C, and the end terminating in the stricture orifice, by applying a vacuum gauge 4 lbs. of a vacuum is to be found at the instant when the valve closes.

ON THE MAGNITUDE OF THE FORCE ACTING ON THE LOWER SIDE OF THE VALVE AT THE INSTANTS OF RISING AND FALLING.

Take a 6" valve, area $28.27 \square$ ", and let the diameter of the stricture orifice be $8\frac{1}{8}$ ", area $50.26 \square$ ", then $50.26 - 28.27 = 20 \square$ ", nearly equal area of concentric head on valve. Let the absolute pressure in the boiler be 114.7 lbs. at the instant the valve rises, and 113.7 lbs. at the instant of closing, then the total force acting on the lower surface of the valve tending to raise it from its seat is equal to $28.27 \times 114.7 = 3,242$ lbs.; and at the instant the valve closes, we have a force acting on the lower surface equal to $28.27 \times 113.7 = 3,214$ + the absolute pressure acting on the concentric area of head of valve, and shown by gauges Nos. 1 and 3 at the instant of closing, and is equal to $26.7 \times 20 = 534$ lbs., and $534 + 3,214 = 3,748$ lbs., equal to the total force acting on the lower surface of the valve at the instant of closing, and $3,748 - 3,242 = 506$ lbs., equal the excess of force acting on the lower surface of the valve at the instant of closing, and greater than that which first rose it from its seat.

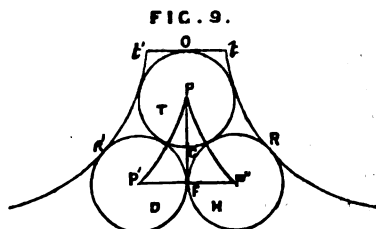
This is the result of practical observation and practice, and the passive observer, or practical-minded man, could go no further into this subject. Hither can he come, but no further; and not until the philosopher came to his aid could he ever discover the cause of this unique phenomenon.

At the instant when the gauges 1, 2, and 3, all become of one pressure—viz., 12 lbs., the gauge which is applied at the stricture orifice will show a line of no pressure, or atmospheric pressure, and the valve exists in the state of the balance, notwithstanding there is an excess of force on the lower surface of the valve equal to 506 lbs. The fulcrum of the force is in the centre of the current of the issuing steam between the seating orifice and the stricture orifice, and at the instant of the valve closing, that line is neutral, and the valve being up from its seat, and the spring compressed beyond its load, it has a force at its command equal

to its extra compression for the purpose of closing the valve, which it very quickly puts into action, and the valve falls to its seat all at once.

STEAM, CAN BE MADE TO PASS THROUGH AN ORIFICE AT A VELOCITY GREATER THAN THAT DUE TO THE INTERNAL PRESSURE.

Fig. 9. Let O be any orifice for the escape of steam, let R t, R' t', be



the boundary walls of the orifice, and let there be three molecules, T, D, H—"Tom," "Dick," and "Harry"—attempting to escape from prison at the same time. Now, Tom is next the orifice through which they are about to escape, and he is unbalanced on the side next O by a space equal to 120° of his periphery; owing to his unbalanced condition he would roll out on the side O, but he would take his own time to it, and "Dick" and "Harry," are impatient to get out, and they are each equally as strong as Tom, so they both unite with their full force to push Tom out; but they cannot both get direct behind him to push him straight out, so they apply their efforts at an angle of 30° each from the line of escape; this reduces their force to $\cdot 866$ of the full magnitude, or the cosine of the angle of application F, P, P', but $\cdot 866 \times 2 = 1.732$. Now, let the velocity of Tom, due to the internal pressure, be represented by radius or unity, then the velocity with which he will be sent out into the atmosphere will be represented by $1.732 = F P$. Or if the velocity of steam, due to pressure, be 1,000 feet per second, then by the conditions herein set forth the velocity at the escaping orifice will be $1,000 \times 1.732 = 1,732$ feet per second.

ON THE NEUTRAL LINE OF FORCE IN THE CENTRE OF THE ISSUING CURRENT OF STEAM.

Let T, D, H be again three molecules of steam under pressure, but not allowed to escape, the fulcrum of the forces is in the centre of the interstitial space between the molecules; let the orifice O be suddenly opened, T will escape, and D and H will follow, but they cannot go out in a straight line, because they meet with partial resistance from the walls of

the orifice R t, R' t'; that resistance is represented by the 12 lbs. pressure on the surface of the concentric head of the valve.

Conceive T to have made its escape, there is now no resistance in front of D and H, and therefore there can be no fulcrum, and D and H will fall freely from P' to P, and from P'' to P, at the same time their respective peripheries roll along R t, &c., and so long as the gauges show a pressure of above 12 lbs. so long will T be offering more or less resistance to D and H, but on the gauges registering 12 lbs., it is evidence that T is escaping freely, and the fulcrum of molecular force is entirely taken up and represented by motion of D and H along the line F O, representing the centre line of the current of escaping steam, and the lift of the valve being such that the stricture orifice just carries away as much steam as the seating orifice can supply to the chamber C, and F P having become a neutral line of force, the stricture orifice having become a perfect molecular vortex, the valve exists in the state of the balance. The spring now asserts its right to be master of the ceremonies, and closes the valve in virtue of the duty assigned to it.

Through the kindness of Mr. Thomas Gray, Assistant Secretary to the Board of Trade, I am enabled to supply you for publication the official report of the behaviour of the valve in question, on board the ss. *Hoopoe*, engined by Jack and Rollo of Liverpool, and, borrowing the dictum of the "surveyor," it will be seen by the rapid rise of the pressure that the boilers were excellent generators of steam.

" Board of Trade, Whitehall Gardens,

(M. 8428.)

" 6th September, 1875.

" Steamships.

" Sir,—I am directed by the Board of Trade to enclose herein, for your information, a copy of a report made by one of their officers as to the test for accumulation of pressure of the Spring Safety-Valves fitted to the steamship *Hoopoe*.

" I am, Sir, your obedient servant,

" THOMAS GRAY.

" Mr. T. Adams,

" 47, Granby Row, Manchester."

" Board of Trade Surveyor's Office,

(Copy 8428)

" Custom House Arcade, Liverpool,

" 12th June, 1875.

" Sir,—In accordance with M. 8428, I have the honour to report that on the 11th inst. I tested, under steam, Adams' Spring-loaded Safety-

Valves as fitted to the boilers of the steamship *Hoopoe*, of Cork, with the results hereafter submitted :—

STARBOARD BOILER.				PORT BOILER.			
A.M.		lbs.		A.M.		lbs.	
11.15	Stm. on Guage	66	Water in glass 7".	11.55	Stm. on Guage	68	Water in glass 2½"
11.17	"	69	Valve blowing	11.56	"	70	Valve blowing
11.17½	"	68	" shut	11.57	"	69	" shut
11.17¾	"	69	" blowing	11.57½	"	70	" blowing
11.18	"	68	" shut	11.58½	"	69	" shut
11.18½	"	69½	" blowing	11.59½	"	70½	" blowing
11.21	"	68	" shut	12.0	"	69½	" shut
11.21½	"	69½	" blowing	12.1½	"	70½	" blowing
11.22	"	68½	" shut	12.2	"	69½	" shut
11.22½	"	69½	" blowing	12.3½	"	70½	" blowing
11.23½	"	68	" shut	12.4½	"	69	" shut
11.24½	"	69	" blowing	12.6	"	70½	" blowing
11.26	"	68	" shut	12.6½	"	69	" shut
11.26½	"	69	" blowing	12.8	"	70	" blowing
11.31	"	68	" shut	12.8½	"	69	" shut
11.31½	"	69	" blowing	12.9½	"	70	" blowing
11.31¾	"	68½	" shut	12.10	"	69½	" shut
11.32	"	69	" blowing	12.11	"	70	" blowing
11.32½	"	68½	" shut	12.11½	"	69	" shut
11.32¾	"	69½	" blowing	12.13	"	70	" blowing
11.33½	"	68	" shut	12.13½	"	69½	" shut
11.33¾	"	69½	" blowing	12.14½	"	70½	" blowing
11.34½	"	68½	" shut	12.15	"	69	" shut
11.34¾	"	69½	" blowing	12.15½	"	70	" blowing
11.35½	"	68½	" shut	12.15¾	"	69½	" shut

Water in glass 4½ inches.

Water in glass 1 inch.

" Before beginning this test I had the fires put in the best possible order for generating steam, as the Board will see by the rapidity with which the steam rose during the twenty minutes' trial.

" These valves are, without exception, the most sensitive in their action of anything of the sort I have ever witnessed, the highest accumulation of pressure over the load being but ½ lb.

" I have to inform the Board that these valves are not quite in accordance with our rules, there are two valves on each boiler 8½" diameter, and each boiler has got about 40½ feet of grate surface, so that they should be 8½", this fact I have acquainted the builders of.

" I have the honour to be, Sir,

" Your most obedient Servant,

(Signed) " GEO. HERRIOT.

" The Assistant Secretary,

" Marine Department Board of Trade,

" London, S.W."

It will be seen from this report of Mr. Herriot's, that an engineer sitting at the further ends of the earth, and with the *Nautical Magazine* before him, can tell whether the boilers were good or bad, whether

the coal was good or bad, whether the stokers were doing their duty or not, and whether the valves were efficient or non-efficient. Everything that he requires to be informed of on the subject is there before him. But although two valves are fitted to each piece of boiler, having $40\frac{1}{2}$ square feet of grate, only one valve was in action; the second valve being loaded 1 lb. above the other was not called upon to perform. It will also be seen that these valves are 7 per cent. less than the Board of Trade regulation prescribes; this was the result of a mistake, not that I wish to countenance any departure from the Board of Trade size of valve, for I can discharge a greater quantity of steam through the orifice of a Board of Trade valve than any other with which I am acquainted.

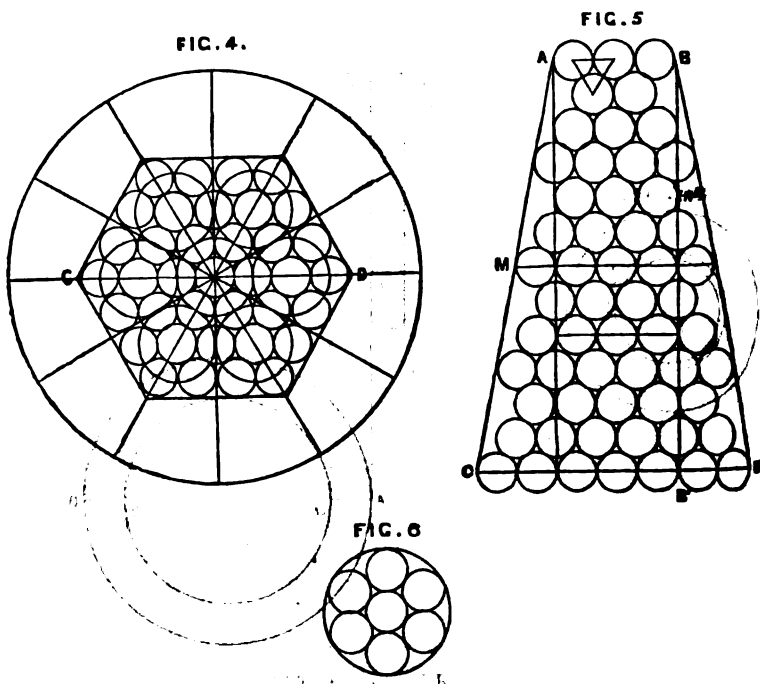
But good as these results are, they were beaten on board the steamship *Britannia*, belonging to the Pacific Mail Company, on the 18th inst. This ship has four pieces of boilers having 108 square feet of grate surface in each piece, and being fitted with a pair of $5\frac{1}{4}$ " diameter valves to each boiler. These valves blew off at 65 lbs., and closed at $64\frac{3}{4}$ lbs., only a quarter of a pound between the greatest and least pressures, and only one valve in action, and not one solitary ounce of accumulated pressure could be got during the test, which was severe enough to satisfy the most ardent apostle of hot fires, for had his sulphuric majesty paid a visit to the stoke-hole while the surveyor and the Company's superintendent were there, he could have done none other than said, "Well done, good and faithful servants." These gentlemen, in physique fine specimens of the human race, stripped and entered the stoke-hole with composure, but with a will and determination which knew nothing but "duty" for the time being. Addressing Mr. Morrison, the Company's superintendent, the surveyor says, "Are your valves set?"—"Yes." "What do you blow off at?"—"65." "Well, get to the other end of the stoke-hole and wire-in. Here, stoker; hand me that shovel." And no knight of the shovel ever handled it to better advantage, for they made it ply between the bunker and fire-doors with the dexterity of mountebanks tossing balls in the air. "Reach me that 'slice,'" says he, to another professional of the stoke-hole. He applied it, and the whole ship trembled under the draught of the fires, which continued for about twenty minutes, and finding they could not get the gauge above the blowing-off pressure, they gave in, filled the boilers up with water again, and then commenced his official "test;" at the expiration of which, they declared they had never seen the like of it in their lives.

This is a special and a marked ship for record, because she was fitted with certain other Patent Spring Safety-Valves, and was tested by the same surveyor. The other valves were loaded to blow off at 55 lbs., and when subjected to the Board of Trade test, the pressure rose to 85 lbs., and

was still going up, when the doors had to be opened to allow it to fall; when it fell to 40 lbs., at which pressure the valves closed—45 lbs. being the difference between the greatest and least pressures, just 180 times greater than the author's valve. The Board of Trade, very wisely, ordered their removal.

ON THE INCLINATION OF THE ANGLES OF THE ORIFICE FOR A MAXIMUM DISCHARGE OF STEAM.

Fig. 5.—Let A B be any orifice, of which Fig. 6 is a plan, discharging



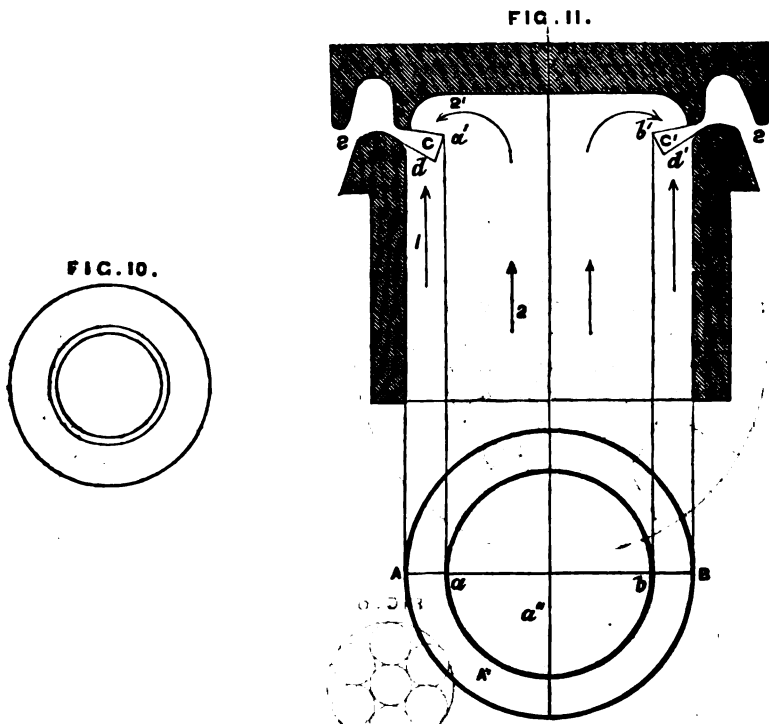
seven molecules of steam at once, each one forms an angle of 60° with its neighbour, which entirely prohibits them from passing an orifice in a straight line. Their path is that of a helix.

Let B be any molecule making its exit at the orifice A B. Then B M B' is the path of that molecule towards the orifice from the inside of the valve, and C D, Fig. 4, is the area over which the molecules must be collected in order to feed the orifice A B; it contains 97 molecules; but if the relative area of C D to A B be either contracted or enlarged, the result will be a depreciation of the value of A B; but B D must also bear a relative proportion to A B and C D, and if that proportion be disturbed,

the result is a depreciation of the value of AB as an orifice for discharging steam, and these proportions resolutely fix a relation between diameter and lift of valve.

ON THE "BOARD OF TRADE RULE" OF A HALF [SQUARE INCH OF AREA OF VALVE TO ONE SQUARE FOOT OF GRATE AREA.

Let Fig. 11 be the author's valve (applied according to the Board of



Trade rule) up from its seat and in the act of blowing; it is a 3" diameter valve. It is required to find the opening of orifice which will discharge the greatest quantity of steam. Let AB be the diameter of valve = 3", and a, b be half the area of valve = $2\frac{1}{8}$ ", then the area A'' will be equal to the area a'' . Draw the lines a, a', b, b' ; draw e, d, e', d' , equal to 36° from the horizontal line; draw d, a' intersecting a, a' in the point a' , such that e, d, d, a' is proportioned to A, C, C, D in Fig. 5. Draw also a', N such that e, N is proportional to A, B in Fig. 5. The steam will pass out at e, N in an orderly manner, because the velocity and quantity of steam passing by arrow 1 is equal to that at arrow 2, and the upper half of the orifice is equally as well fed as the lower half, and a uniform flow of steam through

the orifice will be the result. But let the lift of the valve be increased, $e N$ will be widened, and the base $d a'$ of the frustrum of the cone C will come in nearer to the centre of the valve, taking away the area that is feeding the upper half of the orifice, and creating an unbalanced condition of the flow of the steam as it approaches the orifice. The velocity towards the upper half being retarded, and instead of the molecules entering the orifice in good order, they approach it like two men meeting at a doorway together, each trying to get in first, and neither one will give way to the other, and neither can get in, and not until they have altered and properly arranged their position can either of them pass through the door. So is it with the steam, and this disorder increases with an increase in the lift of the valve, until the base $d a'$ of the cone C meets the centre line of the valve, where it reaches its meridian, and if the lift of the valve be still further continued until it reaches one-fourth of its diameter, then a second evil is created beneath the valve in the form of a vacuous cone, see Fig. 10, which is like the hollow in the flame of a candle; it is a vacuity equal to the area bounded by the periphery of the inner circle, and is non-effective in discharging steam. But there is another evil attending upon a valve lifting one-fourth of its diameter, the expansion of the steam, and consequent enlargement of the volume as it approaches the orifice, materially reducing the quantity discharged, which quantity is 31 per cent. less than that discharged through a Board of Trade valve, presenting an opening at the narrowest part of the orifice equal to one twenty-fourth part the diameter of the valve, and this is the relation between the diameter and lift of valve, which gives the greatest coefficient of discharge, and should this relationship be disturbed, either by increasing or decreasing the lift, the value of the orifice will fall.

It is a very good boiler, and the fires must be in good condition, that will generate steam at the rate of $3\frac{1}{2}$ lbs. per minute in the neighbourhood of 70 lbs. pressure. But accepting these as the conditions, and applying a valve constructed on the Board of Trade rule, and applying a spring to the Board of Trade formula, such a valve will not only allow of no accumulation, but it will carry away the steam as fast as it is generated, and in addition will reduce the pressure from 70 to 68 or 2 lbs. in 30 seconds of time, 1 lb. in 17 seconds, $\frac{1}{2}$ lb. in 9 seconds, and $\frac{1}{4}$ lb. in 5 seconds, and take its seat at any of the above reduced pressures desired.

All engineers have been astonished at the tenacity with which the Board of Trade has adhered to this rule, and all thought it vague and erroneous, until the flow of steam through the orifice was to some extent defined. The report of the Safety-valve Committee appointed by the Institution of Engineers and Shipbuilders of Scotland, after three years experimenting, pronounced it perfect at 73 lbs. absolute pressure, and as 75 lbs. was the general practice of the day, the Board of Trade

rule was found to be practically perfect. But [not only is it perfect at 73 lbs., but with the author's springs it is perfect for all pressures, because the springs allow the valve to present the most efficient orifice for discharge, whatever be the pressure, and whatever be the size of valve. All ordinary valves lift practically the same height under similar circumstances whatever be their diameter. This causes the relieving power of the valve to be proportional to its diameter, while the Board of Trade rule as applied to the grate surface varies as the squares of the diameters. Not so with the author's valve, the lift of which varies, as the diameter presenting an orifice proportional to the square of the diameters; a 3" valve presenting an orifice $\frac{1}{8}$ " wide at the narrowest part, equal to 1.178 square inches, while a 6" valve presents an orifice of $\frac{1}{4}$ " at the narrowest part, equal to 4.71 square inches, just four times the orifice of the 3" valve, thus constituting the Board of Trade valve not only perfect at 73 lbs., but perfect at all pressures and all dimensions of valves.

MOLECULAR VORTEX.

The Works of the "Ant and the Bee,"
Manchester.

(To be continued.)

PIRATES.

AT the mention of the word pirate, the mind instinctively reverts to the tales of mingled adventure and atrocity which were the delight of our boyhood, and wherein are recounted the doings of certain adventurers, French, English, and Dutch, who for years infested the Spanish main—a confederacy whose depredations produced the first levy of ship money in England, and was not broken up until the peace of Ryswich at the close of the seventeenth century. Closely allied in our memory with the achievements of these worthies, are the adventures of Paul Jones, of Captain Kidd, and of that hero of the Egean Sea, who was, we are assured by Byron—

"The mildest mannered man
That ever scuttled ship or cut a throat."

But "the poetry of piracy" and the hard facts connected with that occupation are very different matters, and the repression of this particular species of maritime employment has cost this country from time to time

much trouble and round sums of money. The chastisement of the Buccaneers was the work of the best part of a century. The Corsairs who infested the Mediterranean under the command of the redoubtable Barbarossa, long remained the terror of that sea, and were only extirpated after a lengthened and costly struggle. Early in the present century, the cruel and continued piracy practised in the neighbourhood of Algiers brought a British fleet to that port, and the success which attended its operations raised Admiral Pellew to the peerage. Shortly afterwards our cruisers found abundant employment in hunting down pirates amongst the Greek islands—a region which had long acquired distinction as the abode of sea robbers. In more recent times, the miscreants who haunt the Chinese waters have greatly troubled the commerce of that part of the world, but the united efforts of the British, French, and American cruisers have kept these fellows somewhat in check. A few years since, a locality lying on the north shore of Africa, just within the Straits of Gibraltar, and known as the Riff Coast, attracted considerable attention by reason of the piratical disposition of the inhabitants, and many accounts were received of successful attacks upon unsuspecting merchantmen passing along that seaboard. At length a Prussian ship of war seized the opportunity, closed with these robbers, and inflicted so severe a chastisement that we have since heard no more of the pirates who made Cape Tres Forcas a place to be feared and avoided by passing vessels. It was hoped that with the disappearance of the Riff robbers would pass away the last remains of piracy in the waters of the Mediterranean. Not so, however. Within the last few weeks, unmistakeable indications of piratical disposition have manifested themselves on the Spanish coast in the neighbourhood of Cape de Gatte and Cape Misa. Vessels have been boarded and plundered, and the robbers have got clear away with their booty. These audacious outrages have attracted the notice of Her Majesty's Government, and a direct representation on the subject has been addressed to the Spanish Government. A ship of war has been ordered to the locality, and the officer in charge has been directed to collect all necessary information and to report. In these days it is rather too much to say that sea robbers shall be permitted to infest the most frequented routes in the Mediterranean, to board and pillage passing vessels with impunity. A question of some nicety arises as to the punishment of this class of offenders. A pirate by the Law of Nations is a common enemy—a maritime Ishmaelite—every man's hand against him, and his hand against every man. He may therefore be pursued and exterminated, though the Jurists have held that it is not lawful to kill pirates without trial except in battle. Those who surrender should be brought before the proper authority to be dealt with according to law. By the ancient common law of this country, a curious distinction was taken between

piracy committed by a subject and piracy committed by an alien ; the former was regarded as treason, being an act contrary to natural allegiance, the latter was a felony only ; this distinction was abolished by the Statute of Treason (25 Edward III., c. 2), and now by the Statute Law piracy is a felony, whether committed by a subject or by an alien. Further, there may be piracy by the Municipal Law of a country which is not so by the Law of Nations ; for example, trading in slaves is piracy by the Law of England, though it is certainly not so regarded by International Law. The piracy of modern times, such as that which has been pursued in the waters of China and in the Mediterranean, is an offence against Municipal Law rather than against the International Code. For this reason, it has been the practice where captures have been made to hand up the offenders to the local authorities, and for the same reason the demand has been addressed direct to the Spanish Government to suppress the outrages alleged to have been committed by Spaniards, if not in Spanish waters. It is of course the duty of every State to prevent its subjects from assailing or injuring in person or property the subjects of any other State, and it is no derogation from the sovereignty of any State to be called upon to cause its subjects to respect the laws by which all civilized States are governed. No State within the circle of civilization would venture to refuse a demand so legitimate as that which has been preferred in the case of the pirates of Cape de Gatte. If this could be so, then it would of course be the plain duty of all Maritime States, whose ships visit the Mediterranean, to take the law into their own hands, and to see that the highway of commerce through that sea is safe from piratical attempts. Such outrages are no doubt a sign of that lawlessness which results from a weak local executive ; but there is no European State that would willingly invite the co-operation of foreign powers to compel its subjects to respect the first principles of law.

BOOKS RECEIVED.

- Rivista Marittima*, for September and October. Rome. 1875.
Approximate Freeboards. By F. W. Wymer. London: Imray & Co.,
 Minorities. 1875.
 We shall notice this work at length in our next number.
Quarterly Report of Meteorological Office, January—March, 1874.
*Report of the Meteorological Committee of the Royal Society for the
 year ending 31st December, 1874*.

EMIGRATION TO SOUTH AMERICA.—No. I.

THE migration of the human race is as necessary to the world as the circulation of the blood is to the body; emigration may be compared to the veinal flow, purifying and relieving the congestion of redundancy in old countries; and immigration to the arterial, imparting life, strength and fecundity, to infant communities struggling into existence; like the circulation of the blood, this migration should be incessant to keep mankind in a healthy state, and, consequently, the greatest care and attention should be paid to the source from which it starts, the course through which it flows, and the point at which it discharges.

So much rascality has been developed, so much ignorance exposed, and so much death, misery, and disappointment inflicted by neglecting these precautions, that I propose, in a series of articles, to offer some observations upon the emigration of British subjects to the South American States, which, I trust, may prove useful, as efforts are being now renewed by several of these States to obtain them in large numbers, and it would be an act of humanity to let them, at least, know what they have to expect in accepting proposals which, they should bear in mind, are issued by contractors, or concessionaires as they are called, and which, without exception, set forth all the advantages, and suppress the inevitable disadvantages attendant upon any scheme of emigration.

By the term "emigrant," without other special designation, I shall include agricultural labourers, for they constitute the main stream of migration, destined, like the overflowing of the Nile, to fertilize the land to which they are bound, to increase and multiply themselves, and become the fathers of future nations. Compared to them, the merchant, the engineer, the mechanic, and the shopkeeper, are but as tributary rivulets, useful, indeed, but scarcely to be considered as emigrants. They go abroad, succeed or fail in business, and return home. The field labourer rarely does this; he makes a fortune, or he dies; in either case remaining where he is.

An intending emigrant should be guided in his choice, after having minutely examined the material advantages, and means of transit proposed, by the still more essential considerations of climate, race, and laws; and, as regards the first, I would lay it down as a rule that, as great changes of climate are to be avoided, his course should be latitudinal, not longitudinal—that is, from east to west, and should not diverge north or south far beyond the limits of the country of his birth. In point of fact, all the great historical migrations of the human race have been from east to west, have continued in the same direction to the

present day, and have proved successful or not in the ratio in which they have adhered to or swerved from the course indicated. The failure of the Spaniards and Portuguese to people their splendid possessions in the West Indies and the greater part of South America, compared with the success of the English in North America, is attributable to this cause. In the latter, the Anglo-Saxon race predominates, and can never be now eradicated; in the former, a hybrid race abounds, and is, in fact, supplanting the Spanish in many of the oldest colonies in Paraguay. For instance, the Spanish language is confined to the upper classes, and Guaraoic spoken in its stead.

No efforts ever have succeeded or ever can succeed in planting European emigrants within the tropics or its verges. Take the terrestrial globe, pass the eye over its tropical regions, and under whatever Government, be it Christian, Mahomedan, or Pagan, not a country can be found in which the agricultural labourer is not of some coloured race, or where the white is anything more than the dominant one; whether, therefore, it be our own or the foreign possessions, West Indies, Central America, Colombia, Venezuela, Peru, Paraguay, Bolivia, Ecuador, or Brazil, and the Argentine Republic (except the southern provinces of the two last-named), who bid for emigrants, they must seek them at the apex of their climatic diagram, which will in none of these cases be in Europe; it would only lead to disappointment and embarrassment if they succeeded in procuring them there, and in death to those who might be persuaded to go. Brazil, in former years, when its Government paid less attention to the subject than it does now, presented some tragic conclusions of Irish and German immigration, and Paraguay, very recently, of an English immigration. There are, indeed, but four States in South America (I may even say from the Carolinas in the United States, to Tierra del Fuego) that are climatically adapted to European immigrants—namely, Chili, Uruguay, the southern provinces of the Argentine Republic, and the extreme southern province of Brazil.

Considerations of these are extremely important to all classes of emigrants. Fortunately for our people, all the northern parts of America have been permanently settled by our race, and for this reason, added to so many others, such as climate, laws, customs, education, language, and religion, Canada and the Northern States of the Great Union, present themselves as the natural havens of the British emigrant. It is not my object now to enter into details respecting the localities to which an emigrant should go, but rather to point out to him where he should not go; this I shall do under the separate head of each South American State; but I cannot resist reminding him that if, in addition to the pain of abandoning his country, his people, friends and relations, the laws and Government under which he has grown up and been protected, he seeks

an unknown land where everything is changed, even the heavens and the earth, where an alien race looks upon him with distrust, whose habits are foreign to his, and where he cannot even make himself understood, I say he weights himself for the pace, and no advantage which may be offered him will compensate for the chances he has lost, in rejecting those fertile fields for emigration which have been prepared for him by his own countrymen, and where political freedom, security of life, and personal independence are secured to him.

Some idea of the laws of the country to which an emigrant proposes to transport himself, and under which he is to live, would appear a self-evident necessity; but how many of the poor deluded people who migrate to foreign countries ever think of enquiring anything about them? Any one of them might unwittingly break the laws before he had been in the country a week, and rot in prison; I knew in one of the Spanish colonies, a British subject, an honest respectable married man with a family, and a coachbuilder by trade, who had been in prison for two years because a few days after his arrival in the colony he did not halt when challenged by a guardia civil, or armed policeman; the man was riding along the road when the policeman met him, pistol in hands, and desired him to stop. He could not understand a word of Spanish, and being frightened, galloped off, the policeman fired, but missed him, so he escaped for the time, but was arrested a day or two afterwards, tried by court-martial for "resisting the armed force of the country," and condemned to the chain gang for two years. I interested myself for him, but was frankly told that he was too good a man, and too useful in mending the officers' carriages to be allowed to leave before the expiration of his time, but that he would be kindly treated, as I believe he was. Thus was this hardworking man reduced to slavery for two years in a foreign country, and his wife and children left to starve at home without any knowledge of his fate. In the same colony a British field labourer was shot for nothing by a drunken guardia civil, and when his companions expostulated three more were shot, and some fifty imprisoned. They were also tried by court-martial for "resisting the armed force," and condemned to various terms of imprisonment, and it was considered by the Spanish Government a sufficient reparation, in answer to the expostulations of our own, that they pardoned the prisoners! I could multiply cases of this sort, but these will be sufficient to show how necessary it is for the intending emigrant to foreign countries (I, of course, do not consider the United States a foreign country in this sense) to enquire not only into the working of the criminal laws, but also into the civil. What, for example, are the laws of contract betwixt employers and employed? Whether the laws are good; the judges upright; the course of justice pure, prompt, and economical; whether life and property are secure? Nor should we

run away with the idea that a democratic constitution and enlightened laws necessarily secure political liberty or personal security ; the written law is so much waste paper unless administered with purity, and that is rarely or never the case in South American States. The emigrant should not be deceived by the promise of high wages. He should first of all enquire if they are sure to be paid, and if satisfied upon that point, what is their exchangeable value ; high wages in general imply, unfortunately, expensive living, and he may find that increase of pay is, after all, decrease of means.

I should have offered some observations in these preliminary remarks upon the ships in which it is proposed to convey him, but the Board of Trade and Mr. Plimsoll have done so much to protect him, that I think I may safely leave him in their hands, and proceed to examine in detail the claims to his attention of the different South American States, commencing with the

ARGENTINE REPUBLIC.

The Argentine Republic is, beyond all comparison, the best adapted of the South American States for European emigration, notwithstanding that the greater part of its vast territory must be excluded from the calculation, for if all its Provinces north of the 30th degree of south latitude, and all the territory south of the 40th degree be omitted, the first as too hot for European field labour, and the latter as too cold, barbarous, and unproductive, still the whole of the fertile Provinces of Carrientes (in part), Entre Rios, Santa Fé, S. Luiz, S. Juan, and Mendoza, and, above all, that of Buenos Aires, with its inexhaustible Pampas, and other unequalled advantages, offer fields of immigration unsurpassed by any others in South America.

Before proceeding with the subject of emigration, it is as well to give a general idea of the Republic and its resources.

The River State was discovered by the Spaniards, under Juan Dias de Salis, in 1515 ; in 1530, the City of Buenos Aires was founded ; in 1776, Buenos Aires was made a Viceroyalty ; in 1810, the colonists revolted, and, after a civil war of six years' duration, declared their independence of the mother country ; from that period to 1852, when the Dictator Rosas was expelled, the country became a prey, like most other South American States, to military Condillos, or adventurers, and the present state of the Republic can only be fairly dated from that time.

The Viceroyalty of Buenos Aires, which contained at its last census, in 1782, 170,892 inhabitants, is now the Argentine Republic, with upwards of 2,000,000 inhabitants. Its territory extends, north and south, from the equator to Tierra del Fuego, and, east and west, from Buenos Aires to the Andes ; it is divided into fourteen Provinces or States, and three terri-

tories, and its gross superficial area is said to be a million of square miles. There exist, of course, disputed questions of frontier, Paraguay claiming portions of the Grand Chaco, and Chili the greater portion of Patagonia.

There are all varieties of climate and production in the Republic, from the tropical, in its northern Provinces, to absolute cold and sterility at its southern extremity, whilst all the productions of the temperate zone are to be found in its central Provinces, which enjoy the very finest climate in the world.

The natural means of communication are magnificent; the estuary of the Plate is the gate by which the commerce of the world finds entrance to the grand water courses of the interior. At its extremity, and near the embouchure of the Parana and Uruguay, the port of Buenos Aires is situated. Thence the Parana is navigable for a thousand miles, passing the Provinces of the Entre Rios, Santa Fé, and Carrientes, into the neighbouring Republic of Paraguay, whilst the Upper Parana and Paraguay rivers open a communication with the Provinces of Brazil as far as Cuyahâ, in Matto Grasso, for another thousand miles. Numerous grand tributaries, such as the Salado and Permejo rivers, are highways to the north-western Provinces, whilst the Colorado and Negro connect the Atlantic Provinces of the south with the Andes and Pacific; and the great Uruguay, starting from the Brazilian Provinces of Santa Catarina and Rio Grande do Sul, and flowing down the eastern shores of Carrientes and Entre Rios to the Plate, alike forms the frontier, and places the Republic in easy communication with all parts of the neighbouring Republic of Uruguay.

In speaking of the natural means of communication, the great plains of the Pampas must not be omitted. Without forests or other serious obstructions, it is a land prepared by nature herself for the railroads which will gradually intersect it.

It is not surprising, therefore, that such a country, with such a climate, should have made very rapid progress in the arts, sciences, and material prosperity. I am indebted, in a great measure, for the following statistics to the Consular Returns and Mulhale's work upon the River Plate, which were collected from Government sources.

Return of trade of the Argentine Republic for the year 1873 :—

		Imports.			Exports.		
		£	s.		£	s.	
England	8,868,824	12	...	1,978,861	8
France	8,645,027	12	...	1,785,563	16
Belgium	593,517	4	...	2,778,301	12
United States	1,088,528	4	...	606,589	
Italy	756,876	16	...	297,585	
Spain	590,520		...	246,889	8

RETURN OF TRADE—(continued.)

			Imports.		Exports.	
			£	s.	£	s.
Chili	...	...	288,886	8	478,095	
Brazil	...	...	593,790	12	158,892	16
Uruguay	...	...	547,059	16	198,589	16
Germany	...	...	645,603		89,919	8
Holland	...	...	322,823	4	45,240	16
Other Countries	...	...	399,864	4	420,108	
			£18,285,766		£9,024,081	

The imports consist of the manufactures or produce of the different States from which they come ; their detail, it is impossible, and indeed unnecessary, to give here, but the nature of the exports will be at once more useful and interesting to the Emigrant.

			Exports in 1873.	
Wool	...	...	203,610,000 lbs.	£8,280,424
Sheep skins	...	...	72,970,000 „	831,773
Ox and cowhides	...	...	3,121,738	2,114,342
Jerked beef	...	...	916,220 quintals	422,183
Tallow	...	...	1,182,240 „	1,485,580
Live horned cattle	...	...	162,428	320,000
Other animals	...	...	58,856	67,160
Minerals	...	...	13,540 quintals	62,034
Bones, skins, horns	...	...	...	543,641
Hay, tobacco, and flour	...	...	...	31,378
			£9,158,515	

This addition does not quite agree with that of the preceding table, but is sufficiently near for the purposes of this paper.

The increase in the value of the imports has been very considerable. In 1870, the gross value was £9,324,955 ; in 1873, £18,285,766 ; and that of the exports, at different periods during the last twenty years, as follows :—In 1853, £1,400,000 ; in 1860, £4,240,000 ; and in 1873, £9,024,081.

The gross trade of the country doubles in less than ten years, the aggregate value of imports and exports combined being, in 1862, £9,000,000 ; in 1866, £13,200,000 ; and in 1872, to £21,000,000 sterling.

The tonnage of shipping has also greatly increased. In 1863, the total tonnage of all shipping entering and leaving the ports of the Republic was 1,520,706 tons ; in 1872, 2,151,640 tons.

There are thirteen regular lines of steamers (exclusive of the Liverpool and Pacific Line, which do not touch at any port of the Republic, although they bring numerous passengers for them as far as Monte Video) of which three are English, possessing thirty-four ships of the first-class.

The revenue of the Republic, and the manner in which it is raised and expended, will be interesting to the emigrant. In 1863 it amounted to £1,295,736, in 1874 to £4,782,000, thus obtained :—

Import duties	...	...	...	£3,200,000
Export duties	...	...	...	550,000
Warehouse fees...	...	...	...	130,000
Stamps	...	...	...	75,000
Post-office	...	...	...	38,000
Telegraphs	...	...	...	21,000
Lighthouses	...	...	...	21,000
Interest on various loan funds	...	...	...	90,000
Interest on Central Argentine Railway shares				47,000
Treasury bills	...	...	...	560,000
				<hr/>
				£4,732,000

And thus expended :—

Interest on public debt	...	...	...	£1,560,000
Floating debt	...	...	...	700,000
Custom-house officials	...	...	...	300,000
President and Cabinet	...	...	...	45,000
Congress	...	...	...	100,000
Army...	...	...	...	1,040,000
Navy...	...	...	...	60,000
Indian subsidies	...	...	...	45,000
Legations abroad	...	...	...	33,000
Federal Court	...	...	...	31,000
Ecclesiastical grant	...	...	...	38,000
Schools and libraries	...	...	...	310,000
Finance offices	...	...	...	80,000
Railways	...	...	...	45,000
Immigration	...	...	...	46,000
Post-office	...	...	...	72,000
Telegraph	...	...	...	52,000
Subsidies to Provinces	...	...	...	45,000
Public Works	...	...	...	180,000
				<hr/>
				£4,732,000

The President, Sarmiento, congratulated Congress upon a surplus of

nearly a million sterling, the revenue having yielded £400,000 more and the expenditure having proved less than was anticipated.

The National Debt in 1874 amounted to £14,200,000, that is to say, £10,019,421 the amount of the Foreign debt, and £4,186,795 that of the Home debt, or about £7 a head of the whole population.

Public instruction has made wonderful progress in the Republic since the advent of President Sarmiento to power in 1868; he has devoted the greater part of his valuable life to this end, but regarding it as the panacea for all the barbarism in its various forms that years of civil war have implanted in his country, it owes an undying debt of gratitude to him, and should instil upon his successors that they can show no surer proofs of patriotism than by following his example. The latest returns show that there are 1,645 public schools, attended by 108,000 pupils, inclusive of 4,000 who are receiving University education; there are also 108 free libraries in the Republic.

There were 17,000 depositors in the Banks of Buenos Aires, about 14,000 of whom are European artizans and labourers, the average deposit of the whole being £300 sterling each.

There are ten lines of railways open to traffic, with an aggregate length of upwards of a thousand miles, and five others in the course of construction; there are eighty miles of tramways in the city of Buenos Aires alone, and 7,000 miles of telegraph.

The form of Government is similar to that of the United States—a President and Federal Legislature for the Republic, and a Governor and Local Legislature for each Province, besides a Mayor and Municipal Council for each of the chief cities.

The Republic must be regarded rather as a pastoral than an agricultural State, as, in the latter point of view, it has increased very greatly during the last ten years, and flour and other cereals have ceased to be imported, as sufficient is provided for home consumption. The live stock may be estimated at fifteen millions of horned cattle, four millions of horses, and eighty millions of sheep.

Great encouragement is given to immigration, the laws relating to which are liberal and enlightened; about 100,000 Europeans, the greater portion of whom are Italians, migrate to the Republic annually, but I do not propose now to proceed further into the details of this question; a separate article will be devoted exclusively to it. In this it has been intended to afford such general information as will prove useful to intending emigrants, and let them know the sort of country to which they are bound. In the next, they will be shown the sort of life which they would lead after their arrival, and their chances of success in obtaining domestic and social happiness, or acquiring an independence, and perhaps a fortune.

H. A. C.

THE SINKING OF H.M.S. "VANGUARD."
(1st September, 1875.)

THE following judgment was delivered on the 29th September, on board Her Majesty's ship *Royal Adelaide* flagship at Devonport, by a Court-Martial, presided over by Rear-Admiral Lord John Hay, C.B., second in command of the Channel Squadron :—

"Having heard the evidence which has been adduced on this inquiry and trial, the Court is of opinion that the loss of Her Majesty's ship *Vanguard* was occasioned by Her Majesty's ship *Iron Duke* coming into collision with her off the Kish Bank, in the Irish Channel, about 50 minutes past noon, on the 1st of September inst., from the effects of which she foundered ; that such collision was caused—

"Firstly : By the high rate of speed at which the squadron of which the vessels formed part was proceeding while in a fog.

"Secondly : By Captain Dawkins, when leader of his division, leaving the deck of his ship before the evolution which was being performed was completed, as there were indications of foggy weather at the time.

"Thirdly : By the unnecessary reduction of speed of Her Majesty's ship *Vanguard* without a signal from the Vice-Admiral in command of the squadron, and without Her Majesty's ship *Vanguard* making the proper signal to Her Majesty's ship *Iron Duke*.

"Fourthly : By the increase of speed of Her Majesty's ship *Iron Duke* during a dense fog, the speed being already high.

"Fifthly : By Her Majesty's ship *Iron Duke* improperly sheering out of line.

"Sixthly : By the want of any fog signal on the part of Her Majesty's ship *Iron Duke*.

"The Court is further of opinion that the cause of the loss of Her Majesty's ship *Vanguard* by foundering was a breach being made in her side by the prow of Her Majesty's ship *Iron Duke* in the immediate neighbourhood of the most important transverse bulkhead—namely, that between the engine and boiler-rooms, causing a great rush of water into the engine-room, shaft alleys, and stokehole, extinguishing the fires. In a few minutes the water eventually finding its way into the provision-room flat and provision-rooms, through imperfectly fastened water-tight doors, and owing to leakage near 99 bulkhead.

"The Court is of opinion that the foundering of Her Majesty's ship *Vanguard* might have been delayed, if not averted, by Captain Dawkins giving orders for immediate action being taken to get all available pumps worked, instead of employing his crew in hoisting out boats ;

"And if Captain Dawkins, Commander Tandy, Navigating Lieutenant Thomas, and Mr. David Tiddy, the carpenter, had shown more resource of energy in endeavouring to stop the breach from the outside with the means at their command, such as hammocks and sails.

"And the Court is of opinion that Captain Dawkins should have ordered Captain Hickley, of Her Majesty's ship *Iron Duke*, to tow Her Majesty's ship *Vanguard* into shallow water.

"The Court is of opinion that blame is imputable to Captain Dawkins for exhibiting want of judgment and for want of duty in handling his ship; and—

"That he showed a want of resource, promptitude, and decision in the means he adopted for saving Her Majesty's ship *Vanguard* after the collision.

"The Court is further of opinion that blame is imputable to Navigating-Lieutenant Thomas for neglect of duty in not pointing out to his captain that there was shoaler water within a short distance, and in not having offered any suggestion as to the mode of stopping the leak on the outside.

"The Court is further of opinion that Commander Tandy showed great want of energy as second in command under the circumstances.

"The Court is further of opinion that Mr. Brown, the chief engineer, showed want of promptitude in not applying the means at his command to relieve the ship of water.

"The Court is further of opinion that Mr. David Tiddy, carpenter of Her Majesty's ship *Vanguard*, is open to blame for not offering any suggestions to his Captain as to the most efficient mode of stopping the leak, and for not taking immediate steps for sounding the compartments and reporting from time to time the progress of the water.

"The Court adjudges Captain Richard Dawkins to be severely reprimanded, and to be dismissed from Her Majesty's ship *Vanguard*, and he is hereby severely reprimanded and so sentenced accordingly. The Court adjudges Commander Dashwood Goldie Tandy, and Navigating Lieutenant James Cambridge Thomas to be severely reprimanded, and they are hereby severely reprimanded accordingly. The Court adjudges Mr. Robert Brown, chief engineer, and Mr. David Tiddy, carpenter, to be reprimanded accordingly. The Court imputes no blame to the other officers and ship's company of Her Majesty's ship *Vanguard* in reference to the loss of the ship, and they are hereby acquitted accordingly."

Such is the report of the Court-Martial on the officers and crew of H.M.S. *Vanguard*.

To make the circumstances of the case clear in the shortest possible space, we give the following particulars and diagrams. There were four ships under the command of Admiral Tarleton, who is Commodore of the Reserves, with a position at Whitehall, or Spring Gardens,

about equal to that of a Lord of the Admiralty; in fact, for practical purposes, he may be regarded as the Sea Lord, having charge of the Coast-guard ships and the Reserve Sea Forces. He took out for a special cruise, under his own care and sole charge, four of his Reserve Ships—*Warrior*, *Hector*, *Vanguard*, and *Iron Duke*. He proposed proceeding with these four ships, on a voyage of exercise or inspection, from Kingstown to Queenstown. In making the contemplated passage he would, therefore, in some parts of it, be in the direct track of large emigrant ships running between Liverpool and New York, and of passenger steamers from Queenstown and Waterford. At or about noon, the Admiral's fleet was in one line, and was steering S. $\frac{1}{2}$ E. Fig. 1 shows, approximately and roughly, how the four ships were then situated as regards each other.

FIG. 1.



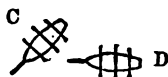
A signal was made from the Admiral's ship (A) for ships C and D to move ahead, and to one side, so that the four ships should bear the relative positions shown approximately by Fig. 2.

FIG. 2.



Fog was coming on; it came on so thickly during the manœuvre necessary to place the ships in the position shown in Fig. 2, that the ships lost sight of each other. Ship C swerved from her course to avoid a merchant ship, and for that purpose as well as in consequence of the fog, slowed according to the directions contained in the International Steering and Sailing Rules; while ship D, Fig. 1, swerved from her course and increased her speed, in order to take up her position as shown in Fig. 2. As a plain result, ship D ran down ship C, as shown in Fig. 3,

FIG. 3.



instead of completing the manœuvre, which would have put the four ships in the relative positions shown in Fig. 2 as aforesaid. We are now told that this came about from many causes, the first of which was the high rate of speed at which the squadron, of which the vessels C and D formed a part, was proceeding while in a fog. The Court have not said who was

responsible for that high rate of speed in a fog, nor have they stated that the speed was necessary or unnecessary, or dangerous or safe to merchant ships, or absolutely against or according to Imperial and International Law. The Court have blamed no one for the high rate of speed in a thick fog, though it appears to the Court to have been the first and prime cause of the whole catastrophe.

Captain Dawkins and the officers of the ship (C) *Vanguard*, have as yet only been on trial. It has not yet been made to appear whether there was or was not any necessity for the voyage to be made by the fleet in the unsettled state of the atmosphere. But the voyage was ordered to be made, and the officers of the ship C deemed it to be their duty, under circumstances that arose, to go slow in a fog, according to the International rules governing all ships, and according to the discretion which the Admiral stated they had a right to exercise : while the officers of ship D, *Iron Duke*, appear to have felt it incumbent on them, in accordance with the same discretion, to put on extra speed in a fog to execute the orders given by the Admiral to fall into the position shown by Fig. 2. The Admiral himself testified that the matter of speed was a point on which each officer was required to form his own opinion, under the circumstances.

That D should run into C under the circumstances would appear to be a mere incident of the service being performed at the time, but what is not yet made clear is, why these manœuvres should be executed in thick fogs at all, and how it is that two ships sailing in the same squadron should act on distinctly opposite rules or principles, or without any rule or principle having been specially issued for the special cruise. All we know at present is, that a squadron of four ships started for a coasting cruise, and that two of them arrived at their destination in entire ignorance of the doings of the other two ; that one of the other two slowed in a fog, and altered his course to avoid a merchant ship, as requested by the International regulations, and the other put on speed in a fog. The officers of the one that slowed are the first and only selected for enquiry, and the first to be severely punished and reprimanded all round.

The fact that there was only one spanner on board to close numerous water-tight doors and was not sufficient ; that the suction-hose of one of the main pumps required to be opened with a knife like an oyster, and that the necessary knife was not handy when wanted ; and that a steam whistle of ship D was not, at the time of the fog, connected with any steam whereby it could be blown, are mere incidents having nothing to do with the main features of the case. They are interesting enough as mere details bearing on questions of general administration, but have no bearing on the first cause which led to half a squadron engaging in its own discomfiture in a fog, while the other half steamed rapidly and gaily away.

Since the above was written, the following has been made public :—

"Admiralty, Oct. 12, 1875.

"The Lords Commissioners of the Admiralty have had under review the minutes of proceedings at a Court-Martial assembled by their order of the 7th of September last to inquire into the cause of the loss of Her Majesty's ship *Vanguard*, and to try Captain Richard Dawkins and the officers and ship's company of that ship, under the 91st and 92nd sections of the Naval Discipline Act, 1866.

"The evidence adduced at the trial was, as regards the conduct of all persons concerned, so complete and exhaustive that their Lordships deem it unnecessary to order any further inquiry with a view to fix responsibility upon anybody for the loss of the ship.

"The Court was of opinion that the loss was occasioned by Her Majesty's ship *Iron Duke* coming into collision with the *Vanguard* off the Kish Bank, in the Irish Channel, at about 50 minutes past noon on the 1st of September inst., from the effects of which she eventually foundered, and that such collision was caused—

"1. By the high rate of speed at which the squadron (of which those vessels formed a part) was proceeding while in a fog.

"2. By Captain Dawkins, when leader of his division, leaving the deck of his ship before the evolution which was being performed was completed, especially as there were indications of foggy weather at the time.

"3. By the unnecessary reduction of speed of Her Majesty's ship *Vanguard* without a signal from the Vice-Admiral in command of the squadron, and without Her Majesty's ship *Vanguard* making the proper signal to Her Majesty's ship *Iron Duke*.

"4. By the increase of speed of Her Majesty's ship *Iron Duke* during a dense fog, the speed being already high.

"5. By Her Majesty's ship *Iron Duke* improperly sheering out of line.

"6. By the want of any fog-signal on the part of Her Majesty's ship
• *Iron Duke*.

"Their Lordships consider that the first cause assigned by the Court did not in any way contribute to the disaster.

"That the Vice-Admiral in command was, under the circumstances of the case, justified in continuing the rate of speed ordered until the time when he made the signal to reduce it; but that the Vice-Admiral was wrong in the view he put before the Court that it was within the discretion of leaders of divisions to act, with regard to speed in a fog, independently of, and contrary to, the orders given by him. Their Lordships cannot point out too strongly the imperative duty that attaches to every officer in command of a squadron to keep his ships together in their assigned stations in readiness to execute his orders; and the opinion

expressed by the Vice-Admiral, in his evidence, that the captains of the ships in his squadron would have been justified in parting company during a fog without orders from him, is one which their Lordships cannot approve.

"They also consider that the signal made by the Vice-Admiral on the day of the disaster for the alteration of formation from 'single column' to 'columns of division line ahead,' though not contributing to that disaster, was not the best signal to make, but that the signal 017 in the general signal book would have been preferable, and would have caused the evolution to have been performed in the least time and space, and have kept the squadron throughout under his control. Their Lordships are of opinion that the loss of the *Vanguard* was mainly owing, first, to the reduction of speed of that ship, and, secondly, to the improper sheering out of line and quitting station by Her Majesty's ship *Iron Duke*, by the order of Lieutenant Evans, officer of the watch.

"Their Lordships attach no blame to Captain Hickley, of Her Majesty's ship *Iron Duke*, in respect of the speed of his ship at the time of collision, it being his duty to regain his station, and he being warranted in supposing that Her Majesty's ship *Vanguard* was maintaining the speed at which she was going when she was last in sight.

"Their Lordships are pleased to approve the several sentences passed upon Captain Dawkins and certain officers of the *Vanguard*, and they order Lieutenant Evans to be dismissed from Her Majesty's ship *Iron Duke*.

"While deploring the misfortune which has befallen Her Majesty's Service by the foundering of the *Vanguard*, their Lordships wish to record their heartfelt satisfaction that no lives were lost on the occasion, and they notice with approbation the promptitude with which the boats of the *Iron Duke* were lowered and ready for service immediately after the collision."

It appears from the above that the matter is at an end, and that the officers of the only ship in the squadron that acted on the International Steering and Sailing Rules, and slowed in a fog and went out of her way to avoid a merchant ship, are severely punished. We trust that officers of the merchant service will not take this as an intimation that they are to be punished and the insurance forfeited if they obey the rules. We do not believe that the Lords Commissioners of the Admiralty intend to convey such an intimation; and it is certain that the High Court of Admiralty would not endorse such an opinion. As a general deduction, we would ask all lovers of Government interference in the management of the Mercantile Marine, whether it is likely that Government management in that case would be more effective than the same management in the Royal Navy. Our Royal Navy is the perfection of navies. Its officers are good in every sense; its ships are the best that human ingenuity can construct, and its finances are unlimited; yet

with all this there are breaks down and failures. In the case of the *Megara*, there was no charge that the loss was brought about by a combination of Government officials and shipowners of murderous tendencies inside and outside the House of Commons, but if a merchant ship were now to be lost under similar circumstances, the owners would be liable to criminal prosecution. In the case of the *Vanguard* and *Iron Duke* again, with all the appliances and resources of Government inspection, there can be no doubt that the absence of "spanners," a broken valve on the pump-hose, and an inefficient steam whistle, all helped to bring about the catastrophe; why should it be otherwise if the merchant service were placed under Naval inspection? We recollect that in the earlier stages of the last Government Merchant Shipping Bill, a ship was declared to be unseaworthy if one life-buoy below a statutory number was left ashore; what then would have been the results if she had no adequate means beyond one spanner for closing her water-tight doors, or no means of blowing her steam whistle? But would Government inspection for merchant ships be better than entire Government control for Navy ships? It is quite clear that if Government inspection is applied to merchant ships, it must logically go the whole length, and then the owners will be free from responsibility. It matters not what the law might say, for no jury would find a shipowner criminally guilty who had complied with the law entirely, and had obtained certificates of high-paid Government officers. Again, take the case of the *Serapis*. The Prince of Wales, heir apparent of the British throne, is making the most important State visit ever made in the history of the world to our Indian Empire. The Admiralty place at his disposal the finest troop-ship in the world, and the result, as given in the *Times*, is as follows:—

"THE 'SERAPIS.'—The performances of the *Serapis* between Portsmouth and Plymouth in the first instance, and then between Plymouth and Malta, have been so disappointing that Mr. John Oliver, the Chief Inspector of Machinery Afloat at Portsmouth, was summoned on board the Admiralty yacht *Enchantress* on Saturday, and ordered to start at once by overland route to pick the *Serapis* up at Brindisi, in order to overhaul her machinery. The boilers have been found to prime to an extraordinary degree. It was not until the second or third trial that the infirmity was sufficiently overcome to enable her to make her runs on the measured mile in Stokes Bay, where, however, she exhibited capital steaming powers, having attained the extreme speed of close upon 14 knots an hour. But when Captain Carr Glyn, a couple of days before sailing from Spit-head, got under way for a precautionary six hours' trial of the machinery, the boilers were found to prime as much as ever. It was thought that, as the *Serapis* was somewhat deeply immersed in the steam basin at Portsmouth, a quantity of mud had been carried into the boilers with the

water on being filled. This was probably the cause of the priming in the first instance, but when the priming continued all the time during the run to Plymouth it began to be suspected that the action was due to some defect in the construction of the boilers themselves. The chief engineer at Portsmouth, Mr. W. H. Steil, and his second assistant, Mr. A. J. Durston, accompanied the *Serapis* to Plymouth, and it was hoped that when they left her the causes of the priming had been removed. On her passage to Malta, however, it is understood that the utmost speed which could be got out of the *Serapis* was seven knots, and from the sudden departure of Mr. Oliver for Brindisi it is believed that the boilers have again become refractory. The boilers of the *Crocodile*, a sister ship, have also primed greatly on her trial trip, and it is evident that the defect of the cylindrical boilers with which both ships have been supplied is a want of steam space. Mr. Oliver will proceed with the *Serapis* from Brindisi to Port Said, it being left to his own discretion whether it will be necessary for him to go further." Both of her chain cables have parted twice.

In making these remarks, we in no way wish to bring into question the management of our Royal Navy. That management is proved to be the best, the most far-seeing, and the completest that the world ever saw, and the officers of the Navy have over and over again been proved to be the best specimens of England's best of sons. What we mean is, that given the surveillance of the very best Government system, and the very best Government officers and the very best Government Board, as the Board of Admiralty is: the nation at large, the crews of merchant ships, the officers of merchant ships, and the owners of merchant ships, would not possess the material safeguards they do now, so long as each is held personally responsible for his own acts, and is amenable to established and recognised courts of law, presided over by the ablest lawyers, the Judges of the Superior Courts.

THE UNSURVEYED WORLD.—We are glad to notice that the attention of foreigners has been directed to the admirable exposition of the state of the maritime surveys of the world, contained in a lecture, entitled "The Unsurveyed World," delivered some time ago at the Royal United Service Institution, by Staff-Commander Hull, of the Hydrographical Department of the Admiralty, and which at the time we noticed. The lecture has appeared in French and Italian; in the first-named language in the "Explorateur Geographique," and in Italian in the September number of the "Rivista Marittima," published at Rome; the latter is illustrated by a well-drawn chart corrected for the Austrian surveys in the Adriatic.

MR. NORWOOD, M.P., ON RECENT MERCANTILE MARINE QUESTIONS.

WE have much pleasure in reprinting Mr. Norwood's observations at the meeting of the Hull Chamber of Commerce on 6th October last, for in regard to shipping matters Mr. Norwood has done much good work, and is looked upon as a great authority both in and out of the House of Commons. We are glad to count Mr. Norwood as one of our warmest supporters, who believes thoroughly in the general policy advocated in these pages respecting Merchant Shipping affairs—and we chronicle his remarks because we think that, like Mr. Cavendish Bentinck's late speeches, they go some way towards disabusing the public mind of the fallacious theories so prevalent regarding the means of preventing loss of life at sea, and towards counteracting the evil effects of misstatements and exaggerations upon which the recent agitation has been founded.

Having made some general observations, Mr. Norwood went on to say, "Another great measure before the House was the Merchant Shipping Bill. He must express his strongest disapprobation of that Bill. The shipping trade had been harassed for years past in the most improper and irrational manner. He did hope that after the sitting of a Royal Commission, and their report, they might have arrived at some measure which would have settled the difficulty for years to come. They had, however, only witnessed the passing of a measure which was the result of dictation and popular excitement, in a way which he strongly protested against. The Government had been, to his mind, greatly to blame. Their original Bill was not well considered. The unlimited liability clauses were monstrous. The result was they were compelled to withdraw their measure and re-introduce another. When they got half way through it the Bill was shunted for other measures, very much to the regret of every shipping member of the House of Commons. He need not tell them of the immense amount of trouble Mr. Wilson and himself had in communicating with their constituents and others for suggestions. Mr. Atkinson had referred to the unfair and unreasonable agitation to which the shipowners were exposed. He (Mr. Norwood) considered it to be a most unjust agitation. The tactics adopted were gross exaggeration, misrepresentation, and personal abuse. In point of fact it was impossible for any member of the House representing a shipping interest to escape being singled out one after the other for charges of the most reckless and gross character. He had, as they knew, to defend himself from such an attack, and he was ashamed of the House for the way in which they dealt with the 'scene' recently witnessed there, and still

more ashamed of the Government for the easy way in which they accepted any apology offered to them. What they had to do as shipowners, was to make the best of the position in which they were placed. He did not think the Act that had been passed would be carried into effect by the Board of Trade in an improper and unfriendly spirit. It was true that great powers were conferred upon the Board's agents at the various ports, but he believed the Board had no desire to exercise those powers in any harsh or improper spirit. At the present time they were busy making arrangements in the various ports, and those powers would be exercised in proper form. There was a most dangerous clause which might catch the most respectable shipowner, who might be punished for misdemeanour for sending his ship to sea in an unseaworthy condition. Now every vessel that went to sea with a drunken crew was unseaworthy, but whilst pains and penalties abounded for shipowners, there was not a single clause with reference to seamen. Nothing was done to educate him or to restrict him in the malpractices of which he was so often guilty. If time permitted he could refute many of the grossly exaggerated statements of Mr. Plimsoll and his friends, for there was no doubt that his statements in the House as to loss of life and other matters were grossly exaggerated. Mr. Wilson and himself had paid the closest attention to those matters, and had spent a very unpleasant session. He had hoped the shipowners would have given more support to them, for he thought they ought not to submit to the sweeping allegations and gross abuse that had passed for granted as truth throughout the country. They had allowed these charges to be made without in the slightest attempting to correct the mis-statements. Mr. Atkinson had complained of the conduct of some of their shipping members. He had reason to find the same fault. Shipowners had never held together, and he was sorry to say they were as disjointed in the House of Commons as out of doors, but the time had come when action ought to be taken seeing the conduct of Mr. Plimsoll had been so unreasonable that it had disgusted many of his best friends. He trusted that in the next session they would go into that question in a fair and proper spirit." (Applause.)

After a few remarks from Mr. C. H. WILSON, M.P., the colleague of Mr. Norwood, who imputed blame to the Board of Trade, but generally agreed with what Mr. Norwood had said, a vote of thanks to the two members was proposed and carried unanimously. Mr. NORWOOD, in returning thanks, said :—

"He might say that when he considered the pressure placed upon the Board of Trade and the way in which the officers had been vilified by Mr. Plimsoll, and the difficulties they had to encounter in putting into execution the most difficult of Acts, he thought the Board of Trade had acted with very considerable judgment. That they had made mistakes there

was no doubt. It was impossible not to have made mistakes, but he believed they were desirous of putting the law into operation in as generous a manner as possible. He found more fault with the system than with the gentlemen composing the Board of Trade. He considered they ought to press for the appointment of a minister at the head of commercial affairs, with a seat in the Cabinet, so that he might be able and have an opportunity to enforce his views upon the Government." (Hear, hear, and applause.)

CHANGE OF FLAG.—The slaughtered Merchant Shipping Bill, 1875, of Sir Charles Adderley, contained the following clause:—6. *Evidence of National Character of Ship.*—In the following cases; that is to say, (1). Where application is made to a registrar to close the registry of a British ship on the ground of her having been transferred to a person not qualified to own a British ship; and (2.) Where the master of a ship claiming to be a foreign ship is required to make a declaration of her national character to an officer of customs for the purpose of obtaining a clearance or transire, if any doubt is entertained as to the national character of the ship, the registrar may, if he thinks fit, refuse to close the registry, and the officer may, if he thinks fit, refuse to grant a clearance or transire, until evidence has been produced to his satisfaction of the national character of the ship." There is a port on the east coast, which shall be nameless, where may now frequently be seen ships that look like English ships, and whose crews speak a language closely resembling north country English. They fly a nondescript sort of flag, and they purport to be registered at the port of AROA. These ships make voyages from the east coast of Great Britain to the Continent. AROA is not situated on the Continent; in fact AROA does not exist as a port in any part of the known world, and yet these ships are registered there. In the Argentine Republic is a place up a river called ARROYO de la Chine, but that place is of necessity in South America. How ships looking like English ships, with crews speaking a language like north country English, and trading from north country English ports, have come to be registered at AROA is a mystery that in the absence of an enactment of the sort we have quoted above will probably remain as such. We may be sure that the managing owners will not be registered in the United Kingdom under the new Act.

CORRESPONDENCE.

MISSING SHIPS.

To the Editor of the "Nautical Magazine."

SIR,—There has been a great deal of clamour lately about compulsory survey or classification of vessels as a sure preventative of loss of life at sea. It may not be uninteresting to your readers to glance, with reference to this subject, at the following statement of vessels posted as missing, which I have gleaned from the pages of the shipping papers during the last 15 months, with the aid of the published lists of classed vessels :—

VESSELS REPORTED MISSING DURING THE LAST 15 MONTHS.

Classed or not.	Vessels.	Tonnage.	Lives lost.
Classed	70 ...	35,254 ...	1,017
Unknown whether classed or not ...	35 ...	6,214 ...	268
<hr/>			
Totals ...	105	41,468	1,285

Some of the 35 vessels which are unknown to me as having been classed may belong to local or minor foreign societies, as the books available to me were only those of Lloyd's, Liverpool Underwriters, French Veritas, and American Lloyd's. The numbers may not be rigidly correct, but they have been carefully and honestly collected and are sufficiently accurate for statistical purposes. They do not include missing vessels bound from one port in the United Kingdom to another, as I assume that many such vessels are run down in our crowded waters. Leaving your readers to draw their own moral from these very significant figures,

Oct. 6th, 1875.

I am, yours, &c., X.

[The above figures for the period ended September last, show a decrease in loss of life at sea for *missing* ships, as compared with the previous 12 months, which was 2,381 in 150 missing ships, as against 1,285 in 105 missing ships. The latter figures cannot, however, be taken as trustworthy until they are proved by the Board of Trade Wreck Register, which will no doubt be published shortly. They are, we must also bear in mind, for 15 months as against 12 months, but they are valuable as being a rough attempt to show the loss of life from missing ships happening previously to the operation of Mr. Disraeli's "Stop-Gap" Act of 1875—now mis-called the "Plimsoll Act." The figures are very instructive, they show that four times the number of lives have been lost in *classed* missing ships, as compared with *unclassed* missing ships, and that of the number (105) of ships missing, exactly two-thirds (70) were *classed*, and 35 *unclassed*. The number of lives lost per missing ship

is 14 for a classed ship, and 7 for an unclassed ship. These figures are a further proof of the correctness of our oft-repeated assertion, that it is the ship already classed and surveyed, and not the unclassed ship, that is responsible for the chief loss of life at sea.—ED.]

THE LESSON OF THE "ALBERTA."

To the Editor of the "Nautical Magazine."

SIR,—Surely the importance of this question requires no apology for my continuing to urge it upon public attention, for in the words of the leading journal, "it becomes the duty of every man who can in any degree contribute to the formation of an opinion to urge strenuously on all whom it may concern the conditions of the present problem."

In the earliest days of steam, Sweden and Norway in consequence of the intricacy of their navigation adopted the practice whereby in steering, the motion of the pilot's arm, the direction of the ship's head, and the word of command should correspond.

In 1854 France followed the present practice of England, and in that year a French man-of-war, coming out of Christiansand with a Norwegian pilot, in consequence of a misunderstanding of the order was dashed at full speed upon the rocks. The French then issued an order to their Navy to exercise in this matter care and discretion, and a French Admiral states, that after this he never took a pilot without first enquiring from him how he understood the terms "port and starboard" (båbord and tribord). Six years ago, the French adopted the practice of Norway and Sweden for their Navy; but it was not till five years afterwards, (September, 1874) that they assimilated it for their merchant service, and then by decree.

Last February, Austria, by decree, adopted the same practice, making it obligatory upon all their subjects.

In these days of International communication, when English ships are going into every foreign port, and foreign ships are coming into ours, and when moreover the crews of English ships are composed of every nationality, the question at this moment stands thus: a pilot comes on board and, taking charge, gives the order "to port,"—if the man at the helm is a Norwegian, or a Swede, or a Frenchman, or a Spaniard, or an Austrian, he ports the ship's *head* and goes to the left, and if an Englishman, he ports the ship's *helm* and goes to the right.

In the case of the collision between the *North Star* and the *Leichardt*, the *Leichardt* was lying at anchor at the Nore, and there was no complication of Solent Yachts; the Pilot and the Captain of the *North Star* on the bridge turned on the telegraph lamp green, and the man at the helm swore that he starboarded, but he did not starboard the helm,

and the Pilot, because the ship's head went to the right when he intended that it should go to the left, jumped to the conclusion that the Captain had altered the telegraph, so the Pilot knocked the Captain down, and the Captain rushed down below into the cabin, and entered in the log that the Pilot was drunk.

In the case of the collision between the *Alberta* and the *Mistletoe*, the Quartermaster of the *Alberta* in his evidence states—"The order was given by word of mouth. The usual custom is by motion. It was given by word of mouth because the occasion was more urgent." Did the *Alberta*, in obedience to the word of command "starboard," first begin to go to the right, thereby inducing the *Mistletoe* to port her helm or luff, in order to deaden her way, and then did the *Alberta* starboard her helm in order to go to the left, and attempt to pass under the *Mistletoe's* stern?

Speed is safety if there is no indecision or mistake, as may be evidenced in the vessels plying between Dover and Ostend, Dover and Calais, Folkestone and Boulogne, and Dublin and Holyhead.

It is a question that hardly affects sailing vessels, the terms port and starboard being seldom used by them in steering, the orders given being such as luff, helm's-a-lee—keep her away—hard down—hard up, &c., &c.—I am, yours obediently,

5th October.

W. STIRLING LACON.

P.S.—The Inspectors of Lifeboats, than whom none have better opportunities of judging, state—that among our own seafaring population the utmost confusion exists with regard to the application in steering of these terms "port and starboard"—but there are others who say that if our Government were to follow the example of foreign countries in a course which necessity and the stern logic of facts have forced them to adopt, it would be attended with great danger and confusion.

The same was said some years ago when it was thought desirable to change the word *larboard* to *port* in consequence of its too close resemblance to starboard. It was ordered by the Government of the day, and men's minds readily acquiesced.

The derivation of these terms is in all probability primarily from the Italian, *questa borda* (starboard) this side, and *quella borda* (larboard) that side, and originally from the Latin—*ista* this, *illa* that. In ordaining that motion and the word of command shall correspond, we should probably be going back to the days of Julius Cæsar, when on his invasion of this country he stood upon the poop of the Royal Yacht, and pointing said, "*ista*"—starboard! "*illa*"—larboard!

W. S. L.

[We cannot understand the necessity for retaining the old words "port" and "starboard." It would be much easier to say "go to the right" or

"go to the left"—and to let it be understood that when a pilot standing with his back towards the stern of the ship raises his right hand it shall mean "go to the right," and when he raises his left hand it shall mean "go to the left."—ED.]

ROCKETS FOR DISTRESS SIGNALS.

To the Editor of the "Nautical Magazine."

SIR,—As you are aware the Board of Trade some time since issued regulations to be observed by captains of ships in the use of night signals.

These regulations order that no rocket of any kind is to be fired except as a signal of distress, and that the rockets so used shall be of such a size as to contain 16 ozs. of composition, and, further, that each passenger vessel is to carry twelve of these rockets.

I was officially informed at the Board of Trade office, that so long as the distress signal rocket contains 16 ozs. of composition it will pass, whether half the weight be represented by a star or stars and the explosive composition in the head of the rocket, or whether the whole 16 ozs. form the shaft or rocket itself. The Board does not say or mind what the head of the rocket is to display on bursting, or, indeed, if any stars at all are to be exhibited, the main object being to insure 16 ozs. of composition in the rocket case.

Well, Sir, the captain goes to his shipchandler, who, being human, buys where he can get the greatest profit, and he gets his Regulation Rockets, with 16 ozs. of composition in each, or, perhaps, he does not get this weight, for it rests entirely with the maker to give 14 or 15 ozs. and the surveyors cannot possibly check the weight of the composition: but he has no guarantee that these rockets will go up when required: and conduct themselves as respectable rockets of their size should. He must not use them until he is in distress; and this is an experience he hopes not to have. Formerly he carried a large supply of small rockets, and fired them frequently, and if they *were* bad he got rid of them quickly, and he did not keep them long enough to deteriorate; but now he is in ignorance of the nature of his rockets until his ship is in danger. They may be made by totally incapable people, for anyone may put 16 ozs. of composition into a rocket, and label it, "Board of Trade Regulation Rocket." Indeed, I am quite sure that if captains who stocked their vessels with these rockets when the regulations were issued, were to fire them all to-morrow, not one-half of them would go up at all, and that the remainder would act very indifferently. I am satisfied that many a captain is relying upon his twelve rockets for time of distress, and that, when called upon, not one of them will go up.

I feel this to be a most serious question, and that it is much to be regretted that the Board of Trade should have gone so far into the matter and have left off so soon. To make a rocket of the prescribed size to fully answer its purpose as a distress signal, and to keep for a considerable time, requires very great care. Such large rockets may be made quickly and cheaply of indifferent materials, but tolerably efficient for use in a week's time; but when kept for a month, they will be perfectly useless. The smaller rockets, as formerly used, were much more easy to make, and much less likely to fail when fired. It seems to me that the Board of Trade is seriously to blame in altering a state of things, which I admit was bad enough, to something a great deal worse. How many lives may depend upon a captain's dozen rockets?

The Board says the Distress Rocket shall contain 16 ozs. of composition, but takes no step to compel the weight being adhered to (within a few ounces), and does nothing to guarantee the supply of a really serviceable rocket, for the weight of the composition does not ensure this.

Your obedient servant,

ROCKETS.

October 19, 1875.

CAUTION.—Adverting to the fearful consequences resulting from fire at sea, and bearing in mind the finding of the Court of Inquiry into the loss of the *Cospatrick*, that the calamity had been brought about by the carelessness of plunderers in the fore-hold, the Board of Trade have thought it necessary to draw public attention to the punishment to which persons guilty of plundering cargo render themselves liable. By the 249th Section of the Merchant Shipping Act, 1854, any seaman found guilty of embezzling, or wilfully damaging any of the stores or cargo of his ship, is liable to forfeit out of his wages a sum equal in amount to the loss thereby sustained, and also, at the discretion of the Court, to imprisonment for any period not exceeding twelve weeks, with or without hard labour. The Board are also advised, that all persons whosoever, whether among the passengers or crew, who are found guilty of the offence of plundering cargo are liable, under the Larceny Act, of 1861, at the discretion of the Court, to penal servitude for three years, or imprisonment with or without hard labour for a term not exceeding two years, and with or without solitary confinement.—By order of the Board.—T. H. Farrer, secretary; Thomas Gray, assistant-secretary. Marine Department, Board of Trade.

SHIPBUILDING, 1875.

STEAMSHIPS.

Ports.	No. of Ships		No. of Ships		Gross Tonnage		Gross Ton.	
	first six	months.	added in July,	August, & Sept.	first six	months.	added in July,	August. & Sept.
Glasgow	52	...	24	...	50,760	...	16,464
Greenock	11	...	7	...	13,998	...	6,616
Port Glasgow	...	18	...	9	...	8,033	...	4,390
Sunderland	...	12	...	10	...	15,522	...	10,031
Newcastle	...	21	...	12	...	24,433	...	11,872
North Shields	...	5	...	2	...	3,118	...	122
South Shields	...	8	...	5	...	3,095	...	1,889
Liverpool	5	...	6	...	4,127	...	5,226
Dundee	6	...	3	...	3,276	...	1,952
Hartlepool	...	11	...	2	...	12,399	...	2,739
Aberdeen	2	...	1	...	1,357	...	643
London	9	...	7	...	4,083	...	846
Belfast	—	...	—	...	—	...	—
Stockton	...	4	...	—	...	4,832	...	—
Kirkcaldy	—	...	—	...	—	...	—
Middlesbro'	...	8	...	1	...	8,657	...	505
Hull	1	...	3	...	3,110	...	4,063
Leith	—	...	1	...	—	...	72
Bo'ness	2	...	—	...	1,841	...	—
Whitehaven	...	1	...	—	...	232	...	—
Barrow	1	...	—	...	1,025	...	—
Whitby	4	...	1	...	4,602	...	1,008
Other Ports	...	17	...	8	...	1,906	...	2,244
Total		198		102		170,406		70,632

SHIPBUILDING, 1875.

SAILING SHIPS.

Ports.	No. of Ships		Gross Tonnage	
	first six months.	added in July, August, & Sept.	first six months.	added in July, August, & Sept.
Aberdeen ...	5	1	2,815	1,677
Barrow ...	5	1	4,685	1,885
Belfast ...	4	2	4,853	1,473
Bristol ...	—	—	—	—
Cowes ...	4	1	874	1£
Dartmouth ...	18	6	1,568	665
Dundee ...	6	1	5,249	1,153
Faversham ...	1	—	39	—
Glasgow ...	29	25	31,267	23,740
Greenock ...	13	3	9,072	3,147
Hull ...	9	2	645	102
Jersey ...	9	4	818	302
Liverpool ...	12	10	6,747	5,926
London ...	8	9	353	2,694
Middlesbro' ...	1	1	182	650
Newcastle ...	3	5	738	2,526
Plymouth ...	7	4	1,814	361
Port Glasgow ...	9	6	9,006	6,629
Portsmouth ...	3	—	381	—
Rochester ...	6	1	282	45
Southampton ...	7	—	521	—
Stockton ...	2	2	2,594	2,610
Sunderland ...	28	16	20,684	14,411
Whitehaven ...	2	2	2,255	1,685
Workington ...	1	2	1,069	1,260
Yarmouth ...	5	10	145	814
Other Ports ...	96	57	13,077	6,558
Total	293	171	120,133	79,828

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
217	ENGLAND—Lowestoft and Kessingland	Alteration in Lights.
218	CAPE BRETON ISLAND—Green Island	Alteration in Light.
219	SOUTH AMERICA—Orinoco River—Sabaneta Bank	Establishment of a Light-vessel.
220	GULF OF MEXICO—Matagorda Bay—West Shoal Lighthouse	Establishment of a Fog-Signal.
221	BALTIC—Gulf of Riga—Messaragotsem Point	Intended establishment of a Light.
222	BALTIC—Gulf of Finland—Dago Island—Takhkona Point	Intended establishment of a Light.
223	BALTIC—Dago Island—Dageröri Lighthouse	Establishment of a Fog-Signal.
224	BALTIC—Gulf of Finland—Odensholm Island	Intended Establishment of a Light.
225	BALTIC—Gulf of Finland—Wormso Island—Saxbines Light	Alteration in Light.
226	NOVA SCOTIA—South-East Coast—Betty Island	Establishment of a Light.
227	IRELAND—East Coast—Kish Bank	Establishment of a Light-vessel and buoy to mark Wreck.
228	ENGLAND—South Coast—Dungeness	Exhibition of additional Light.
229	ENGLAND—East Coast—Outer Dowsing—Shipwash and Kentish Knock Light-vessels	Establishment of Fog-Signals.
230	ENGLAND—South Coast—Dungeness High Light	Alteration in Light.
231	BALTIC—Kiel Fiord—Bülk Lighthouse	Establishment of a Fog-Signal.
232	GULF OF ST. LAWRENCE—Cape Chatte	Establishment of a new Light.
233	NORTH SEA—Netherlands—Scheveningen	Alteration in Light.
234	NORWAY—West Coast—Nyholm Island	Establishment of a Light.
235	NORWAY—West Coast—Halten Island	Establishment of a Light.
236	ENGLAND—West Coast—Liverpool Bay	Alteration in position of Bar Light-Vessel.
237	ENGLAND—West Coast—Liverpool Bay	Removal of Queen's Channel Bell Beacon.
238	INDIA—Bay of Bengal—Mutlah River	Replacement of Light-vessel.
239	ENGLAND—West Coast—Holyhead—South Stack Light	Intended alteration in Light and Fog-Signal.
240	AUSTRALIA—North-East Coast—Inner Route to Torres Strait	Establishment of Beacons.
241	CHINA—Yang-tse-kiang—Wusung River	Establishment of a Light.
242	CHINA—Yang-tse-kiang—Wusung Light	Alteration in Light.
243	JAPAN—Kiusiu—North-west Coast—Yeboshi Sima	Establishment of a Light.
244	ADRIATIC—Cape Promontore—Porer Rock	Provisional Light.
245	ADRIATIC—Pelagosa Island	Establishment of a Light.
246	ADRIATIC—Kalamota Channel—Port Siano	Harbour Light.
247	NORTH SEA—Netherlands—Hook of Holland	Tidal Signals.
248	NORTH SEA—North Hinder Light-vessel	Alteration in Light.
249	NORTH SEA—Zuider Zee—Urk Island Light	Alteration in Light.
250	ST. LAWRENCE RIVER—Saguenay River	Establishment of Leading Lights.
251	MALACCA STRAIT—North Entrance—Pulo Brasse	Establishment of a Light, and intended auxiliary Light.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.—*Continued.*

No.	PLACE.	SUBJECT.
252	CHINA—Pe-chili Strait—Shantung—Teng-chau	Cancelling Notice respecting Light.
253	COCHIN CHINA—Ti-wan	Position of Pernambuco Reck.
254	CALIFORNIA—San Miguel Passage	Discovery of a Sunken Rock.
255	SOUTH AMERICA—Brasil—Paranagua	Establishment of a Light.
256	SCOTLAND—West Coast—Loch Heurn	Shoal Ground and Entrance.
257	CALIFORNIA—Farallon Islands	Discovery of a Rock.
258	EAST INDIES—Bombay Harbour—Rock east of Elephant	Establishment of a Beacon.
259	EAST INDIES—Bombay Harbour—Butcher's Island	Establishment of a Beacon.
260	HONDURAS—Truxillo Bay	Destruction of Lighthouse and temporary Light.
261	HONDURAS GULF—Ruanan Island—Coxen Roads	Establishment of a Light.

NAUTICAL NOTICES.

217.—ENGLAND.—*East Coast.*—*Lowestoft and Kessingland.*—In consequence of alterations in buoyage in the neighbourhood of Lowestoft, the Lowestoft and Kessingland lights have been altered, and now show as follows, viz. :—

Lowestoft Low Light shows *red* seaward between the bearings of N.E. by N. and S.S.W., and *white* inshore of these bearings. On the latter bearing (S.S.W.) the light changes colour on a line which passes one cable west of North Holm and N.W. Corton buoys, $1\frac{1}{2}$ cables West of South Scroby Elbow buoy, and $4\frac{1}{2}$ cables eastward of Scroby Elbow (bell) buoy.

Lowestoft High Light is no longer masked over Barnard sand. The *red* (additional) light exhibited from the tower of Lowestoft high light is visible between the bearings of S.W. and S.W. by S. This red sector intersects Lowestoft low light at 8 cables off shore, therefore, in approaching Lowestoft Ness from the northward a vessel ought not to be in the white light of Lowestoft low light after losing the red light in Lowestoft high lighthouse.

Kessingland Light is now visible between the bearings of W. $\frac{1}{4}$ N. and N.W. $\frac{1}{4}$ N.

218.—CAPE BRETON ISLAND.—*Green Island.*—The following alteration has been made in Green island light, south coast of Cape Breton island. The light has been changed from a fixed red light to a *revolving red and white* light. The light will make a complete revolution *every minute and*

a half, showing alternately red and white, the greatest brilliancy being attained every forty-five seconds.

219.—SOUTH AMERICA.—*Orinoco River*.—*Sabaneta Bank*.—A light-vessel, from which a light is exhibited, has recently been placed near Sabaneta bank, at the entrance of the Orinoco river. The light is elevated 55 feet above the sea, and should be seen from a distance of 9 miles. The light-vessel is moored in 14 feet, muddy bottom, at a distance of 8 miles from the nearest part of the coast, with Barima point bearing S.S.W., distant 7 miles. Pilots for the river are stationed on board the light-vessel.

220.—GULF OF MEXICO.—*Matagorda Bay*.—*West Shoal Lighthouse*.—A fog-bell has been established in the east gallery of this lighthouse. The bell is sounded at intervals of 10 seconds.

221.—GULF OF RIGA.—*Messaragotsem Point*.—A light of the fourth order will shortly be exhibited from a lighthouse on the north side of Messaragotsem point. The light will show, in an arc of 180° of the horizon seaward, white and red alternately for one minute each colour, and without intervening eclipses; it will be elevated 69 feet above the sea, and should be seen 13 miles. The tower is of iron, painted white. Position, lat. 57° 21' 45" N., long. 23° 8' 20" E.

222.—GULF OF FINLAND.—*Dago Island*.—*Takhhkona Point*.—A light of the first order will shortly be exhibited from a lighthouse on Takhhkona point, north end of Dago island. The light will be a fixed white light visible between the bearings of E. $\frac{1}{4}$ S. through South to W. $\frac{1}{4}$ N.; the light is therefore masked over Nekman grund on the West, and Anker grund on the East; it will be elevated 140 feet above the sea, and should be seen 18 miles. The tower is of iron, painted white. Position, lat. 59° 5' 25" N., long. 22° 36' E.

223.—GULF OF FINLAND.—*Dago Island*.—*Dagerört Lighthouse*.—A fog-bell has been established at this lighthouse.

224.—GULF OF FINLAND.—*Odensholm Island*.—A light of the second order will shortly be exhibited from a lighthouse on the north-west point of Odensholm island. The light will be a flashing white light, exhibiting two flashes, the one lasting six seconds, the other four seconds, each separated by an eclipse lasting two seconds; it is visible between the bearings of N.E. $\frac{3}{4}$ E. seaward as far as the coast; the light is therefore masked over Stapelboten grund and the bank of 15 feet lying to the westward; it will be elevated 115 feet above the sea, and should be seen 16 miles. The tower is of stone, painted with black and white horizontal bands. Position, lat 59° 18' 17" N., long. 23° 23' E.

225.—GULF OF FINLAND.—*Wormso Island*.—*Saxbines Light*.—The following alteration will shortly be made in Saxbines light. The light will show white between the bearings of S.W. $\frac{1}{4}$ W. through South to S.S.E.

$\frac{1}{4}$ E., red between the bearings of S.S.E. $\frac{1}{4}$ E. to S.E. $\frac{1}{4}$ S., and white from S.E. $\frac{1}{4}$ S. through East to N.W. by W.

Note.—The red sector of light is intended to mark the entrance to Worms sound.

226.—NOVA SCOTIA.—*South East Coast.*—*Betty Island.*—From the 1st December, 1875, a light will be exhibited from a lighthouse on Betty island, south-east coast of Nova Scotia. The light will be a revolving red light, attaining its greatest brilliancy every two minutes, elevated 75 feet above high water, and should be seen 14 miles. The tower is a square, wooden building, painted white, with two horizontal red bands; it is attached to the keeper's dwelling. Position, lat. $44^{\circ} 26' 20''$ N., long. $68^{\circ} 45' 50''$ W.

227.—IRELAND.—*East Coast.*—*Kish Bank.*—A light is now exhibited from a light-vessel placed $5\frac{1}{2}$ miles eastward of Kish Bank, near the wreck of H.M.S. *Vanguard*. The light is a revolving green light, attaining its greatest brilliancy every minute; it is elevated 89 feet above the sea. The light-vessel is moored in 23 fathoms water, half a mile E.S.E. from the wreck, with the following bearings:—Kish light-vessel, N. $23\frac{1}{2}^{\circ}$ W., $9\frac{1}{8}$ miles; Codling bank light-vessel, S. $18\frac{1}{2}^{\circ}$ W., 9 miles. Position, lat. $53^{\circ} 12' 30''$ N., long. $5^{\circ} 45' 35''$ W. The light-vessel has three masts, and is painted green, with the word *Wreck* in white letters on her sides. Also a buoy painted green, and marked with the word *Wreck* in black letters, has been placed W.N.W., 150 yards distant from the wreck of H.M.S. *Vanguard*. The buoy lies in 20 fathoms at low water with the following bearings:—Kish light-vessel, N. 21° W., 9 miles; Codling bank light-vessel, S. 15° W., $9\frac{1}{8}$ miles.

Caution.—Vessels should not pass between the light-vessel marking the wreck and the wreck buoy.

228.—ENGLAND.—*South Coast.*—*Dungeness.*—With reference to a Nautical Notice, No. 109 (April, 1875), on the establishment of an additional light, notice has been given that the light is now exhibited. The light is a flashing white light, showing a quick flash at intervals of five seconds, the flash being of two seconds' duration, elevated 28 feet above high water, and is visible over the same arc as that covered by the high light. The building from which the light is exhibited lies S.S.E. $\frac{1}{4}$ E., 225 yards from Dungeness high light tower. The fog-signal (blast of trumpet at intervals of one minute) is placed in this building.

229.—ENGLAND.—*East Coast.*—*Outer Dowsing.*—*Shipwash and Kentish Knock Light-vessels.*—Fog-horns are now established on board the following light-vessels, viz.:—

Outer Dowsing Light-vessel.—In thick or foggy weather the horn will sound blasts of five seconds' duration, with intervals of two minutes between each blast.

Shipwash Light-vessel.—In thick or foggy weather the horn will sound blasts of *five seconds'* duration, with intervals of *two minutes* between each blast.

Kentish Knock.—In thick or foggy weather the horn will sound blasts of *five seconds'* duration, with intervals of *one minute* between each blast.

230.—ENGLAND.—*South Coast*.—*Dungeness High Light*.—With reference to Nautical Notice, No. 110 (April, 1875), on an intended alteration in Dungeness high light, notice has been given that the light is altered from an electric light to the most powerful form of Oil light, and the *red* light to the westward is shown from the lantern instead of from a window beneath it. There is therefore no white light in a westerly direction between the bearing of West from the lighthouse and the land.

231.—BALTIC.—*Kiel Fiord*.—*Bülk Lighthouse*.—A fog-signal is now established in front of the lighthouse of Bülk, west point of the entrance to Kiel fiord, 81 feet above the sea. The signal apparatus consists of a first-class siren trumpet, which in thick or foggy weather will be sounded for *five seconds*, with intervals of *forty seconds*.

232.—GULF OF ST. LAWRENCE.—*Cape Chatte*.—A light is now exhibited from a lighthouse 480 yards E.N.E. from the former lighthouse. The light is a *revolving white* light, showing a *flash every half minute*; it is elevated 120 feet above high water and should be seen 18 miles. The tower is a square wooden building, 26 feet high, and painted white. Position, lat. 49° 5' 55" N., long. 66° 45' 30" W.

233.—NORTH SEA.—*Netherlands*.—*Scheveningen*.—With reference to Nautical Notice, No. 66 (February, 1875), on the intended exhibition of the light at Scheveningen from a new building, and the exhibition of a temporary light, the Netherlands Government has given further notice, that towards the end of November or in the beginning of December, 1875, the new light will be exhibited. The light will be a *revolving red and white* light, showing a flash alternately red and white *every half minute*, elevated 157 feet above the level of high water, and in clear weather should be seen from a distance of 18 miles. The illuminating apparatus will be dioptric or by lenses, of the second order. The tower is built of iron, and painted dark brown. Position, lat. 52° 6' 20" N., long. 4° 16' 10" E. Also, that on the new light being exhibited the temporary light will be discontinued. And, that notice will be given of the exact date on which the change will be effected.

234.—NORWAY.—*West Coast*.—*Nyholm Island*.—A light of the sixth order is now exhibited from a lighthouse on the eastern point of the island of Nyholm, and will be exhibited from the 15th August in one year, to the 30th April in the next. The light is a *fixed red and white* light; thus,—

(1.) *In Western Channel.*—*White* between the bearings of N.E. by E. $\frac{1}{2}$ E., and E. by N., and *red* from E. by N. to East, when it is hidden by Hiertö.

(2.) *In Northern Channel.*—*White* between Hiertö and the mainland, or between the bearings of S. by W. $\frac{1}{2}$ W. and S.W. $\frac{1}{2}$ S.

The light shows white towards the anchorage. The light is elevated 62 feet above the sea, and should be seen 8 miles. The tower is built of stone. Position, lat. $67^{\circ} 17' N.$, long. $14^{\circ} 24' E.$

285.—NORWAY.—*West Coast.*—*Halten Island.*—A light of the second order is now exhibited from a lighthouse on Halten island. The light is a *flashing* light, showing a flash *every four seconds*, elevated 127 feet above the sea, and should be seen 17 miles. The tower is built of white stone. Position, lat. $64^{\circ} 10' N.$, long. $9^{\circ} 27' 30' E.$ This light will be exhibited the 1st August in one year to the 15th May in the next year.

286.—ENGLAND.—*West Coast.*—*Liverpool Bay.*—The following alteration has been made in the position of the Bar light-vessel, Liverpool bay. The light-vessel has been shifted from her station in a N.E. by E. direction. From her new position the Formby light-vessel bears, S.E. $\frac{1}{2}$ E., $3\frac{1}{8}$ miles; Upper Hoylake lighthouse, South, distant $9\frac{1}{2}$ miles; and Crosby light, S.E. by E. $\frac{1}{2}$ E., $8\frac{1}{8}$ miles.

287.—ENGLAND.—*West Coast.*—*Liverpool Bay.*—About the 7th November, 1875, the Bell beacon, off the entrance of Queen's channel, will be discontinued.

288.—INDIA.—*Bay of Bengal.*—*Mutlah River.*—Information has been received that the light-vessel has been replaced in position off Mutlah River. The light-vessel now lies in 11 fathoms. Position, lat $21^{\circ} 4' N.$, long. $88^{\circ} 48' E.$

289.—ENGLAND.—*West Coast.*—*Holyhead.*—*South Stack Light.*—On and after the 1st of January, 1876, the undermentioned alteration will be made in South Stack light, viz. :—The light will revolve *every minute* instead of every *two minutes* as at present. Also, that during foggy weather the bell will be sounded once *every quarter of a minute*.

240.—AUSTRALIA.—*North-east Coast.*—*Inner Route to Torres Strait.*—With reference to Nautical Notice, No. 75 (March, 1875), on the establishment of beacons to facilitate the navigation of the route leading to Torres Strait, notice has been given that the following additional beacons have been erected in the inner route :—Vessels bound northward and westward must leave those beacons which are *red* and *triangular* on the *port* hand, and those which are *black* and *square* on the *starboard* hand.

Port side bound north and west,
red and triangular.

Starboard side, bound north and
west, black and square.

PIPER ISLANDS.

East elbow of eastern reef.

h reef, south end.

k reef, islet, north-west end.

YOUNG ISLAND.

The beacon originally on m reef near Young Island has been washed down; when re-erected it will be placed on Young Island.

CAPE GRENVILLE TO PORT ALBANY.

| V reef, north-west end.

241.—CHINA.—*Yang-tse-Kiang*.—*Wusung River*.—With reference to Nautical Notice, No. 104, on the intended exhibition of a light near the *Lismore* wreck, east side of the entrance to Wusung river, information has been received that the light is now exhibited. The light is a fixed red light of the sixth order; it is elevated 30 feet above high water, and should be seen 5 miles. The building consists of iron screw piles placed in 11 feet at low water, supporting a dwelling-room, which is surmounted by the light. The piles are painted black, and the dwelling-room white. The lighthouse is situated on the east side of the entrance, E. by N. $\frac{1}{2}$ N. from Wusung lighthouse, and 180 yards N.N.W. $\frac{1}{4}$ W. from *Lismore* wreck.

242.—CHINA.—*Yang-tse-Kiang*.—*Wusung Light*.—The red sector of light formerly shown from Wusung lighthouse has been changed to white.

243.—JAPAN.—*Kiusiu*.—*North-west Coast*.—*Yebosi-sima*.—A light is now exhibited from a lighthouse on the summit of Yebosi island. The light is a fixed white light of the second order, elevated 182 feet above the sea, and should be seen 20 miles. The tower is of iron, 44 feet high, octagonal in shape, and painted white. Position, lat. $83^{\circ} 41' 30''$ N., long. $129^{\circ} 58' 50''$ E.

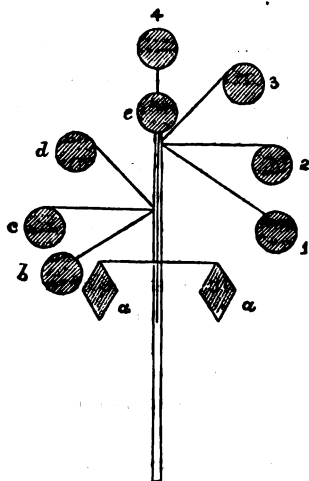
244.—ADRIATIC.—*Cape Promontore*.—*Porer Rock Lighthouse*.—During the time of change in the present light apparatus in Porer rock lighthouse, a provisional light has been exhibited, and will continue to be exhibited, until such time as the permanent light comes into regular operation. The provisional light is a fixed white light, having a red sector in the direction of Sunk rock; it is visible only 10 miles.

245.—ADRIATIC.—*Pelagosa Islands*.—Also, that the construction of a lighthouse on Pelagosa islands being nearly completed, a light will shortly be exhibited. The light will be a fixed white light, varied by flashes every half minute. The tower is erected on the most elevated part of the island. Further particulars will be given hereafter.

246.—ADRIATIC.—*Kalamota Channel*.—*Port Slano*.—With reference to Nautical Notice, No. 72, further information has been received that the harbour light at the entrance of Port Slano is situated on Dogna point, north-west point of entrance. The light is temporarily fixed on a mast on the said point; it is elevated 49 feet above the sea, and should be seen 5 miles.

247.—NORTH SEA.—*Netherlands*.—*Hook of Holland*.—With reference

to Nautical Notice, No. 93, notice has been given that the following additional signals have been established at the Hook of Holland, to denote the depth of water in the canal, viz. :—



	ft.	in.	
<i>d 3 a a</i> when there is	18	4	in the Channel.
<i>c 2 a a</i> „	19	0	„
<i>c 2 a</i> „	19	8	„
<i>c 2</i> „	20	4	„

248.—NORTH SEA.—*North Hinder Light-vessel*.—The *fixed white* light at present shown from North Hinder light-vessel will shortly be replaced by a *revolving white* light. Further notice will be given of the date of alteration.

249.—NORTH SEA.—*Zuider Zee*.—*Urk Island Light*.—The *revolving white* light on Urk island will be changed to a *flashing white* light.

250.—ST. LAWRENCE RIVER.—*Saguenay River*.—Two leading lights are now exhibited from two lighthouses at the entrance of Saguenay river; the outer or eastern lighthouse is situated on Point Noir, and the inner lighthouse 608 yards to the westward of it. The lights are *fixed white* lights, the outer light is 82 feet above high water, the inner light 117 feet; both lights should be seen 9 miles. The lighthouses are each 22 feet high.

Note.—These lights are for the purpose of leading vessels clear of Prince shoal, Bar reef, and Vache shoal.

251.—MALACCA STRAIT.—*North Entrance*.—*Acheen Head*.—With reference to a previous Notice on the intended establishment of a light

on the north point of Pulo Brasse, near Acheen head, at the north-west end of Sumatra island, further notice has been given that the light is now exhibited. The light is a *revolving* white light of the first order, attaining its greatest brilliancy *every minute*, and so continuing *nine seconds*. It is visible between the bearings of E. $\frac{3}{4}$ N. (through south and west) and N.W. $\frac{1}{2}$ W., elevated 525 feet above high water, and should be seen 30 miles. Within the distance of 12 miles a faint light appears between that of the greatest brilliancy. The tower, 120 feet high, is painted white to a height of 98 feet, and above that height, *red*. Position, lat. $5^{\circ} 44' 20''$ N., long. $95^{\circ} 9' 10''$ E. Also, that within a few months it is intended to exhibit a *fixed red* light of the fourth order from the above light tower on Pulo Brasse, at a height of 26 feet above the ground. This light will be visible through an arc of 90 degrees, its central part passing over the North-west islet. The light is intended to warn vessels of their approach to this outlying islet. In clear weather it should be seen from a distance of 12 miles. Further notice will be given of the exhibition of this auxiliary light.

252.—CHINA.—*Pe-chili Strait*.—*Shantung*.—*Teng-chau*.—With reference to Nautical Notice, No. 126 (June, 1875), on the establishment of a light on Teng-chau bluff, Miau-tau strait, information has been received that no light is exhibited on Teng-chau bluff, or from any position near it. The notice is therefore cancelled, as the authority on which it was issued is thus shown to be in error.

253.—COCHIN CHINA.—*Ti-wan*.—With reference to the existence of a sunken rock lying in a south-easterly direction from Cape Ti-wan, and on which the ship *Pernambuco* struck, the following additional information has been received, viz.:—The depth of water on the rock at low water springs is 8 feet. From the rock, Cape Ti-wan bears N.W. $\frac{1}{4}$ N. distant 2 miles, and Cape St. James lighthouse, W. $\frac{3}{4}$ S. These bearings place the rock in lat. $10^{\circ} 21' N.$, long. $107^{\circ} 16' 10'' E.$

254.—CALIFORNIA.—*San Miguel Passage*.—Information has been received of the existence of a rock and coral shoal, lying about a mile from the shore to the northward of Sandy point, Santa Rosa island, in the northern approach to San Miguel passage. The shoal has 11 feet on it at low water springs, and 7 to 10 fathoms on all sides, with a rugged and irregular bottom. There is no kelp on the shoal, and it breaks in heavy weather only. From the centre of the shoal, Harris point, San Miguel island, bears W. by N. distant $8\frac{1}{2}$ miles, Rock off Sandy point (Finder rock), S. by W. $\frac{1}{2}$ W. $1\frac{1}{2}$ miles, and Cardwell point, San Miguel island, W. by S. $\frac{3}{4}$ S. $4\frac{1}{2}$ miles. Other dangers are believed to exist to the eastward of this shoal. To the northward of the shoal, at the distance of three-quarters of a mile, a band of kelp extends a quarter of a mile in an easterly and westerly direction, with 12 and 15 fathoms water in and

around it, this may serve as a warning when thick weather obscures the land.

Note.—Sailing vessels are cautioned not to attempt the San Miguel passage, as the light airs and calms under the lee of San Miguel island and the strong currents in the vicinity, combine to make it dangerous. No vessel should bring the Finder rock to bear to the southward of S. by E.

255.—BRAZIL.—*Paranagua.*—*Isle do Mel.*—A light is now exhibited from a lighthouse on the fort of Isle do Mel, Paranagua. The light is a *fixed white* light visible between the bearings of N.W. $\frac{3}{4}$ N., through west and south, to S.S.E. $\frac{1}{4}$ E., elevated 47 feet above the sea, and should be seen 6 miles. The lighthouse is 80 feet high. Position, lat. $25^{\circ} 30' S.$, long. $48^{\circ} 19' 30'' W.$

256.—SCOTLAND.—*West Coast.*—*Loch Hourn.*—Information has been received of the existence of a sunken rock, as also shoal ground, on which the steam ship *Clansman* recently struck, in the entrance of Loch Hourn. The shoal ground is an uneven ridge of rock lying in mid-channel between the beacon on Skeir Ulibhe and the north shore of the loch; it is 470 yards long in a south-east and north-west direction, and at low water has a depth of 9 feet on its north-west end, and about 30 feet on its south-east end, with 6 to 8 fathoms water between. From the 9 feet rock (*Clansman rock*) the beacon on Skeir Ulibhe bears S.W. $\frac{1}{2}$ W. distant $2\frac{1}{2}$ cables, and is nearly in line with a wooded burn on the south shore of the loch.

Note.—East Raasay island just shut in with Ru Camas na Cean (the northern entrance point) bearing S.E. by E. $\frac{3}{4}$ E. leads to the northward of *Clansman rock*.

257.—CALIFORNIA.—*Farallon Islands.*—From the New York Journal of Commerce, we learn that a rock having $6\frac{1}{2}$ fathoms on it has been discovered S.E. $\frac{1}{2}$ E., distant half-a-mile from South Farrallon lighthouse. There is 18 to 15 fathoms between the rock and the island, and the sea breaks on it only in heavy weather.

258.—EAST INDIES.—*Bombay Harbour.*—A stone beacon having been erected on the eastern edge of the rock east of Elephanta, which dries at low water springs, the buoy marking that danger has been removed.

259.—EAST INDIES.—*Bombay Harbour.*—A stone beacon has been erected on the rock, south-eastward of Butcher's island, which dries at low water, and the buoy marking that danger has been removed.

260.—HONDURAS.—*Truxillo Bay.*—Information has been received that the lighthouse of this bay has been blown down, and that a temporary light is supposed to be exhibited, but that no dependence can be placed on it.

261.—HONDURAS GULF.—*Ruatan Island.*—*Coxen Hole.*—A *fixed white*

light is exhibited on the hill in front of the Government House elevated 85 feet above the sea, and in clear weather should be seen 16 miles. It is about to be placed on the Cupola of the Government House which will give it a further elevation of 10 feet.

HYDROGRAPHIC NOTICES PUBLISHED BY THE ADMIRALTY.

- No. 28.—*South Australia*.—Remarks and Sailing Directions from Fowler bay to Glenelg river, Spencer gulf, Kangaroo island, Cape Jervisto, Murray river, and Murray river to Glenelg river. By Staff-Commander Howard, and Navigating-Lieutenant Goalen, R.N. 1874.
- No. 29.—*China*.—*Hong-kong Island*.—Description of, and Directions for, Bokhara rock, Tathong channel.
- No. 30.—*Magellan Strait* and Channels leading to the Gulf of Penas, &c. Information respecting the above from Chilian, Hydrographic Notices, 1875.
- No. 31.—*Labrador, North-east-coast, Sandwich Bay*.—Information relating to a detached shoal near the entrance of Eagle river. By Commander E. C. Drummond and Navigating Sub-Lieutenant C. H. Hopkins, H.M.S. *Swallow*, 1875.

CHARTS, &c., Published by the Hydrographic Office, Admiralty, to the end of October, 1875, and sold by the Agent, J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.

No.	Scale.		a	d.
1061	m = 0·15	South Australia:—Cape Catastrophe to Nayts Archipelago, with plans of Denial, Smoky, Streaky, and Coffin Bays ...	2	6
472	m = 7·2	Haiti, North Coast:—Port Plata ...	0	6
255	m = 0·75	Jamaica:—Morant to Port Royal and Plan of Morant Cays	2	6
1758	m = 1·38	Spain, West Coast:—Arosa and Pontevedra Bays	2	0
668	m = 2·5	Africa, East Coast:—Tanga and Kokwane Harbour	0	6
2160	m = 0·14	China Sea:—Carimata Strait	2	6
2154	m = 19·5	England, South Coast:—Newhaven ...	1	6
1787	m = 0·9	Ireland:—Wexford to Wicklow	2	6
212	m = 4·7	Sumatra, West Coast:—Padung Road ...	1	0
1674	m = 8·75	Australia:—Brisbane River, Queensland	2	6
F		Index Sheet for Africa and adjacent Islands	0	6

OUR OFFICIAL LOG.

BOARD OF TRADE CIRCULAR.

CERTIFICATES OF CHARACTER.—The Superintendent is informed that when the certificates of character given by masters to seamen on their discharge forms are distinctly inconsistent with the entries in the official log-books, he should decline to sign the form, and should report the case at once to this Department, in order that the Board of Trade may consider whether proceedings should be instituted against the master of the vessel, under Section 176 of the Merchant Shipping Act, 1854.—T. H. Farrer, secretary; Thomas Gray, assistant-secretary.—*Circular No. 32, M. 484, 1875.*

CHARTS.—The following is an extract from a letter which has been sent out by the Board of Trade: “ . . . Attention has been called to cases of shipwreck, in which the loss is attributed to the inaccuracy or inefficiency of the charts on board. In several of these cases the Court before whom they were tried have found the master in default for not being supplied with a complete set of the latest charts, and have punished him accordingly. It seems, however, doubtful whether masters should be called upon to provide vessels with the most recent editions; and whether this duty should not attach to the owners. Under these circumstances, the Board of Trade would be glad to be favoured with an opinion as to whether there is any reason why the shipowner should not see that his ship is provided with proper charts, as with all other necessities for her intended voyage.”

GENERAL.

MARINE INSURANCE (FOREIGN COUNTRIES.)

The following is a copy “of the letter from the Board of Trade to the Foreign Office, enclosing questions concerning the law of foreign countries on the subject of Marine Insurance”:

“To the Under Secretary of State, Foreign Office.—Board of Trade, Whitehall Gardens, 2nd February, 1875.—Sir,—The Royal Commission

on Unseaworthy Ships, which devoted much time to the law of Marine Insurance, has recommended that an endeavour should be made in common with other nations to revise the law on the subject, and to frame a complete and uniform code. As a preliminary step it seems desirable to ascertain what is the law of foreign nations on the several points in which there is doubt or difficulty, and for this purpose the Board propose, should Lord Derby concur, that the enclosed questions, which have been prepared at the Board of Trade, with the aid of Mr. Cohen, Q.C., should be sent to Her Majesty's representative in the several countries named in the margin,* with instructions to procure full and accurate answers to them, either by consulting the Government of those countries, or by referring the questions to competent lawyers. In Holland the Board of Trade have obtained much information from M. Rahusen, of Amsterdam, and if it were thought right by Her Majesty's Minister to consult that gentleman, the Board of Trade feel satisfied that the information would be satisfactory.—I have, &c. (Signed) T. H. FARRER."

(Inclosure.)

QUESTIONS CONCERNING THE LAW OF FOREIGN COUNTRIES ON THE SUBJECT OF MARINE INSURANCE.

1. Is it the principle of the law that contract of insurance is a contract of indemnity merely, and is not to be made a source of profit to the insured? If so, how is this principle carried into effect in the following cases?

2. If it is clearly proved that the assured knew at the time he was insuring his property or interest that he was considerably over-insuring it, what effect would this have on the insurance?

3. If no such knowledge as is referred to in the last question can be brought home to the assured, but if in fact the amount insured exceeds the actual loss, does the law prohibit the recovery of the excess?

4. In the case of a policy on a ship where no value is fixed by the policy, what is the value of the ship taken to be for the purpose of estimating the amount for which the underwriters are held, and how is it ascertained, *e.g.* : Is it her value at the port of departure, and if so, does it include outfit and provisions, and premiums of insurance, and is any deduction made for wear and tear? Or is it her value at the time of loss, or what would have been her value at the port of destination?

5. In the case of a policy on a ship where the value is fixed by agree-

* France, Germany, Austria, Russia, Sweden and Norway, Denmark, Holland, Belgium, Italy, United States.

ment and valuation on the policy, can the insured in case of total loss, actual or constructive, recover from the insurer the amount fixed in the policy, although greater than the actual value of the ship, at the time of the commencement of the voyage or at the time of the loss ?

6. If not, what steps can the insurer take to open the policy and contest the question of value, where he has reason to believe that the insured value exceeds the actual value, and what amount can the insured recover ?

7. If he has the right to open the question of value, are any and what conditions imposed to prevent him from doing so frivolously and vexatiously ?

8. In case of partial loss by damage to ship, can the assured recover wages and expenses accruing during the time of stay in port for necessary repairs, are those wages and expenses considered in the light of general average, or in the light of particular average falling only on the ship ?

9. Does the law allow the shipowner to insure freight or profits ?

10. If so, does it allow him to fix the amount of such freight or profits by agreement and valuation in his policy ?

11. Is he allowed to insure the gross freight, *i.e.*, the whole sum paid to or to be paid to him for the use of his ship, or only the net freight, *i.e.*, such proportion of that sum as would remain to him after paying the expenses of the voyage ?

12. If gross freight is insured, and the ship is lost on her voyage, can the shipowner recover the gross freight or only the amount he has actually lost ? In other words, can he recover the gross freight without first deducting the expenses, such as wages, port dues, &c., &c., subsequent to the loss which he would have had to pay if the voyage had been concluded, but which, in consequence of the loss, he has not had to pay ?

13. If he cannot recover the gross freight, what are the steps by which the insured can resist payment, and in what manner is the amount which he is entitled to recover in respect of freight calculated ? In other words, what are the deductions to be made from the gross freight in respect of the expenses above-mentioned, and how are these expenses ascertained ?

14. If freight is prepaid to the shipowners, and the ship is lost before the completion of the voyage, can the merchant recover the freight from the shipowner ?

15. In the case of a policy on goods, how is their value estimated when they are not valued in the policy ?

16. If valued beyond their real value at the port of shipment or at the port of destination, can the assured recover the excess ?

17. If not, by what steps can the insurer resist payment ?

18. Is there any implied undertaking on the part of the insured that the ship shall be seaworthy ?

19. Does this undertaking apply to time policies as well as to voyage policies ?

20. Is it an absolute warranty of seaworthiness, or is it only an undertaking that the shipowner and his agents and the master of the ship shall, to the best of their ability, do all they can to make and keep the ship seaworthy ?

21. Is this undertaking fulfilled if the ship is seaworthy at the time of first leaving port after the commencement of the policy, or does it extend throughout the whole voyage or period covered by the policy ?

22. Does the unseaworthiness of the ship discharge the underwriters from liability in those cases in which the loss was not in any way occasioned by the unseaworthiness.

23. In what manner does deviation from the usual course of the insured voyage affect the liability of the underwriter ? Does such deviation discharge the underwriter from liability in all cases or only in those cases in which the deviation may be considered as having increased the risk insured ?

24. What is the nature of the tribunal by which questions between insurer and insured are tried ? Is it a judge and a jury, or is it simply a judge, or is it a judge or judges assisted by mercantile or nautical assessors ? In short, what is the composition of the tribunal, and does it give satisfaction ?

LOSS OF LIFE AT SEA.—We have over and over again pointed out that the great loss of life at sea takes place in large, surveyed, classed, and certified ships, yet our humanitarians, goaded on by Mr. Plimsoll and the people, insist on worrying and harassing other ships. We have said before, and we say again, that the country does not want to know the truth, but does want to indulge in cheap sentiment. That our Mercantile Marine is being ruined through Mr. Plimsoll we have already pointed out. If the public cared one straw for fact, they would by this time know, as we have for years pointed out, that it is not possible to prevent great loss of life at sea by interfering with the class of vessels in which life is rarely lost ; nor is it possible to save life by extended classification, seeing that life is now lost principally in classed ships. We have said, and we repeat, that unseaworthy seamen, crimps, and advance-notes, and not unseaworthy ships, lead to the great loss of life at sea. Underwriters will find, too, if they choose to look over their figures, that their great losses, as well as the loss of life, arise on classed and surveyed ships.

BRITISH FLAG AND FOREIGN FLAG.—Under the British flag a shipowner is liable to have his ship stopped at any moment by a “superior”

officer of the Board of Trade, or by the Board of Trade upon information from "inferior" officers; by informers; by Mr. Plimsoll; by the crew; by discharged servants; or by rivals in trade. The agents of foreign lines of ships running in competition with English lines will thus be able to run their English rivals off. British ships can be stopped because their lights do not please the surveyor, or the clear side, or stowage, or deck-fittings, or design, or construction, or equipments, or condition of the ship, do not please *him*. The British ship must have a white patch on her side, and is liable to have the crew knock off if that patch be immersed at any time. The British ship is to ply in competition with foreign ships which are subject to none of these restrictions. No wonder the Englishman transfers his ships to the foreign flag. They can be continued in the same trade as British ships without any of the inconveniences to which British ships are subject, and can load just as they please. A fine opportunity is offered to Germany and Belgium to increase their Mercantile Marine. Transferred ships can carry their Lloyd's class, and effect insurance in England, and employ English agencies as before. The ships that will the more readily be transferred to foreign flags are good sound ships owned by responsible men. The bad ship is of no account, nor is the man of straw. They can stand a chance of risks that no one dare stand who is respectable and has money to lose. The sailor's life will be no safer under the foreign flag, while the master will be able to keep him better in hand than he can under the English flag. The owners can employ foreign masters, and the English masters can become mates or supercargoes, and so forth. There is an immense number of English grain ships in the trade between the Black Sea and France. Those ships will now come under such restrictions that they can no longer compete with foreign ships; and in this trade alone the tonnage of England must therefore decrease by several thousands of tons before next year. How our rival maritime States must be laughing at us. Since January, 1873, nearly 900 British ships have been transferred to foreign flags, and no new ships are built here to replace them. And all this ruin is to come about because Mr. Plimsoll says, which is perfectly untrue, that upwards of 6,000 seamen are drowned every year. As regards little coasters, they will be snuffed out, and the real English coasting sailor, the man to serve in our war ships in emergencies, will be sent ashore and his family ruined, because the ship he can navigate in safety is not good enough to class, or is in the opinion of third parties unseaworthy. The home carrying trade will thus be driven to the railways. If humanitarians who hold shares in railways, or in mines, or factories, or who invest in land and have labourers' dwellings, were to be interfered with, and have their trucks and engines surveyed, and their traffic regulated by Government, and if their employment in

which there is any risk of life or health were harassed, or if labourers' cottages were required to be surveyed, and lighted, ventilated, and drained, to the satisfaction of a classification society, and the labourers' diet set out in a printed scale, and if the number of persons being in any houses were to be regulated by the State on account of danger to health or life by over-crowding, what a howl there would be. Humanitarians having no interest in ships can ruin trade at sea, raise the price of foreign breadstuffs, and throw hundreds of people out of employment, and ruin our maritime supremacy, all on the score of humanity. One important thing will, however, be the result: there will be more labourers on shore then, and shore wages will thereby be kept down, while owing to cost of carriage and other restrictions the price of English beef, mutton, and corn will rise, much to the benefit of the agitators against the shipowners.

DESERTERS AND THE MERCHANT SHIPPING LAW.—“ In February, 1870, a fireman belonging to a steamer deserted at Cardiff. He was a stranger to the locality, but shipped at the Custom House. Last Wednesday, he attempted to engage himself again, but was recognised and stopped by the officials. According to his own account he has been in America most of the time since. If the system of detection is so good as to trip an offender up after the lapse of nearly six years, we should fancy that it would hardly ‘pay’ seamen, or rather loafers, to ‘make their little game’ by cashing spurious advance-notes.” The above is culled from a recent issue of a Cardiff paper; and we merely call attention to it, not so much to show the rather exceptional ‘cuteness’ of the Mercantile Marine officers at that port, but to point out the fact that the limit of six months for prosecutions to be enforced into, presented by the 525th Section of the Merchant Shipping Act, 1854, is inoperative against offenders of the stamp indicated in the paragraph. As we are informed, the deserter neglected to join two steamers in February, 1870, from which he netted an advance of £7 5s. According to his own account, he had been in the United States up till a few months ago, and therefore a prosecution could not be brought against him: 1st. Because he had been more than six months away; and, 2nd. Because he had returned to this country more than two months before being discovered. (*Vide* the Section quoted.) By one of the many Bills introduced, of late years, into the House of Commons, the limit of time was proposed to be extended to twelve months. Judging from the instance now given, that period would appear to be short enough. The defaulter, it appears, was a “rough” who, in other respects, deserved punishment, but in this case only laughed at the impotence of the officers, whose cleverness was fairly thrown away.

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THE GRAIN TRADE.

WE find upon carefully analyzing the Wreck Abstract, that grain-laden vessels, or we should rather, because more correctly, say vessels with grain on board, contributed nearly one-fifth of the whole number of lives lost by wrecks in the year 1873-4. The number of grain-laden vessels from which life was lost was 56, and the number of lives lost was 855. But the coolie ship *Indus*, which was missing with 420 persons on board, was not a grain ship. It is true that she had rice on board, and therefore in classifying her according to cargo she comes under grain and passengers, but in reality she was a passenger ship and not a grain ship. Deducting, therefore the number (420) lost in the coolie passenger ship *Indus*, we have 435 as the entire number of lives lost in *bona fide* grain vessels.

Of these 435 lives, including a few passengers, 81 were lost in 23 ships from "preventible causes"—*i.e.*, strandings, collisions, and other such causes, and 354 in 32 ships from causes that may or may not have been preventible—*i.e.*, missing vessels, and vessels that foundered. The loss of life in steamers was only 109. Of the 18 steamers in which these 109 lives were lost, 2 were missing in the Baltic with 42 persons on board, 6 in the Black Sea trade involving the loss of 36 lives, and 25 lives were lost in two steamers carrying rice and cotton seed from ports eastward of Malacca Straits. It is worthy of remark that considerably more than one-half of the lives lost in the grain trade were lost in vessels bound to foreign and colonial ports. For example, 42 of the 50 lives lost in the Baltic trade were lost in two steamers which sailed in

company from Riga for Stettin and were never afterwards heard of. Now, the British Legislature has surely nothing to do with trade between Riga and Stettin. Also, the missing coolie ship *Indus* was bound from Calcutta for Demerara with rice and 378 coolies. The following statement will show the loss of life on the chief grain cargoes :—

	Preventible.		Non-Preventible.		Total.	
	No. of Vessels.	Lives Lost.	No. of Vessels.	Lives Lost.	No. of Vessels.	Lives Lost.
Baltic	2	8	2	42	4	50
Black Sea	4	21	5	45	9	66
United States... ..	4	20	7	84	11	104
Canada	5	18	1	12	6	30
India, China, &c. (Rice Trade) ...	1	1	7	511	8	512*
Morocco	1	1	3	21	4	22
Other Voyages, including Coasters	6	12	8	59	14	71
	23	81	33	774	56	855

Notwithstanding the stringent rules adopted by the New York underwriters for the regulation of the grain traffic and the strict surveys enforced by them before a vessel is accepted for insurance, the loss of life in the United States grain trade is still very great. It may be seen from the foregoing table that 104 lives were lost in 11 vessels in that trade, and we find that of these vessels 7 were missing with 84 persons on board.

Mr. Plimsoll, M.P., stated in a letter to Mr. W. Hall, recently published in the *Times*, that "for two winters now no grain-laden vessel has been lost from either Canadian or American ports, and this period coincided exactly with the date from which in those countries supervision has been exercised over the loading of such vessels."

As the statistics for the greater portion of the time referred to by Mr. Plimsoll have not yet been published, we are unable to give the exact number of vessels and lives lost in the Canadian and American grain trade during that period, but it will be sufficient, in order to prove the incorrectness of Mr. Plimsoll's information, to direct attention to the figures in the foregoing table, and to the fate of the *Alfred*, *Hilda*, *Sultan*, *Salvia*, *Durham*, *Circassian*, *Ismailia*, *Constance*, *William Anning*, *Silver Cloud*, *Chillingham*, *Wm. Starratt*, and *J. R. Hea*,† all foundered

* Includes coolie ship *Indus*, with 420 lives.

† See *Shipping Gazette*.

or missing in the Canadian and United States grain trade during and since the autumn of 1873. These are a few of the *British vessels* lost on the voyages on which Mr. Plimsoll has been informed that not one vessel was lost. Mr. Plimsoll goes on to state that since the change in the manner of loading grain cargoes in the United States, the rate of insurance has fallen in Californian ports, but he omits to tell us that this desirable state of affairs is not owing to Government supervision, which, in fact, does not exist in the United States. The improvement, if indeed there be any, in the Californian grain trade, is owing to the action of the American underwriters who really exercise a most beneficial control over the loading of grain cargoes, by refusing to accept a risk until their specified conditions have been complied with.

London underwriters are, however, not so fastidious as their brethren of New York nor even of Liverpool. Risks that will not be looked at in Liverpool are taken at Lloyd's. Their business on the whole pays well, and they do not inquire too closely into the loading or condition of the vessels. Every point with them is settled by "adjusting" the premiums. This liberality on the part of the English underwriters has given encouragement to "outside surveyors" in the United States, and those outside surveyors survey vessels for insurance in European offices and are for more generous, or some would say lax, in their conditions than the surveyors of the New York Association. The brokers, on their part, endeavour to ship as much grain as possible, in order to ensure the greatest possible amount of commission for themselves. The masters sometimes take larger cargoes than they deem prudent, in order to gain the good opinion of their owners, and needy owners have, under these circumstances, a great inducement to work the lives out of their ships so as to make the most of them while they float, knowing that if they sink they are fully insured against loss. Whatever the great body of owners may wish, it is certain that rapid loading, heavy cargoes, and insufficient precautions are all fostered under the wing of the London underwriters.

We have said over and over again, and we do not hesitate to repeat, that so long as underwriters undertake to insure grain cargoes in bulk it is incumbent on them, both commercially and morally, to attach conditions to its loading and to see that those conditions are complied with; and if legislation has threatened to interfere injuriously with British shipping in the grain trade, the blame must be left at the door of the English underwriters who have hitherto neglected their obvious duty. From a recently published Parliamentary paper it appears that the Secretary of Lloyd's Committee, in reply to the Board of Trade, says that "no legislation on this side only will be of effective service in

stopping shipments of cargoes of grain in bulk, but that action to be of any power must be taken at the loading port," and that "only in this manner an effective control over all shipments of grain cargoes can be fairly and generally enforced, and that any other legislation must affect only British shipping injuriously while the laws of the country of export would deal equally with ships of all nations."

This argument would be forcible if there were any possibility of inducing the local authorities in the grain ports of the United States, Russia, Turkey, Spain, Morocco, Egypt, and Chili, to adopt wise and uniform regulations on the subject, but the local authorities in grain ports are more intent upon increasing the trade of their ports, and thereby their own profits, than upon seeking for safe methods of stowing the cargo.

The framers of the Act of 1875 must have been aware of this when they provided that the *onus* of stowing the cargo securely should be left with the master and owner, holding them responsible for the seaworthiness of the vessel. Mr. Plimsoll states in the letter referred to above that he "has learnt in the north that the Board of Trade had sent our Consuls a notification of last session's enactment against loading grain cargoes in bulk, but had not instructed or authorised the Consuls to employ any out-door assistance to see that the Act was carried into effect," and that this being so Mr. Plimsoll "cannot return to England comfortably without visiting some at least of the Black Sea ports to inquire whether the Consuls there were any better instructed." Accordingly, Mr. Plimsoll has visited the Black Sea, and writes to the *Times* from Odessa, reiterating in detail his statement as to the instructions to British Consuls. In passing, we desire to take this opportunity of congratulating Mr. Plimsoll on the moderation and unsensational tone of his last letter.

It is, however, a very curious fact that, even in his calm and temperate letter addressed to Lord Derby, and published in the *Times*, Mr. Plimsoll cannot avoid being inaccurate. In quoting Section 8 of the new Act, he inserts the word "properly," and then proceeds to raise up considerable difficulties as to the definition of the term. The fact is, that the word "properly" is not mentioned in the section referred to, and therefore the difficulties are of Mr. Plimsoll's creation merely. Mr. Plimsoll has also stated that the Act of 1875 is an enactment against loading grain cargoes in bulk, but there is in fact nothing in Section 8, which is the only section relating to grain cargoes, against such cargoes being loaded in bulk. The only provision is, that if more than one-third of the cargo is carried in bulk it must be secured against shifting by "shifting boards, bulkheads, or otherwise," and the master and owner are wisely and properly held responsible for

any failure in the method of stowage they may adopt. There is, moreover, nothing in the Act expressly giving power to the Board of Trade to authorise Consuls to employ detectives or out-door officers in the Black Sea or Baltic ports to watch the loading of grain cargoes, nor has the Legislature made any provision for the payment of such out-door officers or detectives; still it is certainly within the power of H.M. Government to follow Mr. Plimsoll's advice and instruct Consuls to employ surveyors and clerks to visit British ships, and report on the methods adopted for securing the cargo. Whether such a proceeding would tend to lessen loss of life at sea, and whether it would not be merely doing the work of the underwriters at the cost of the British taxpayer, are questions which are still not by any means settled; and in reverting to our argument that the only practicable supervision that is possible over the loading of grain cargoes must be exercised by the underwriters, we would offer, for the consideration of our readers, the following reasons in support of our views:—

1. Because the British Legislature cannot interfere with the loading of British ships with grain cargoes in bulk in foreign ports without seriously impeding British shipowners, and driving the trade into the hands of foreigners.

2. Because it would be a dangerous experiment, and an undesirable precedent to invite foreign Governments to assume control over the loading of British ships.

3. Because Lloyd's and the other great underwriting associations have it in their power, without vexatiously interfering with the ships of any country, to exercise a most effective check on the careless loading of grain cargoes; indeed, it is obvious that their interest lies in this direction, as shippers would then invariably choose the ships submitting to the underwriters' rules, on the ground of safety and light premium.

Captain Hozier, the Secretary of Lloyd's, said, in his letter to the Board of Trade, that interference on the part of the English underwriters would have the effect of transferring the business of underwriting to foreign countries. While denying Captain Hozier's assumption, we may observe that it would be a lesser evil if our ships were insured in foreign countries than if they were bodily transferred to them.

DISTRESS AND PILOT SIGNALS.—Marine Department, Board of Trade, Whitehall Gardens, 5th November, 1875.—The Board of Trade have received through the Secretary of State for Foreign Affairs a translation of a decree of the Dutch Government, stating that on the 1st of January, 1876, the signals of distress and the signals for pilots set forth in Schedules 1 and 2 of the "Merchant Shipping Acts Amendment Act, 1878," will be adopted by Holland.

RATS ON BOARD SHIP.

THE *Shipping Gazette*, in a recent number, had a curious article on the destructive nature of rats on board ship. It states that they have caused the foundering of many ships by gnawing holes in the planking, or so eating away the inner sides of the wood as to leave very little for the straining of the hull to do in completing the aperture; they have been known to nibble the timber at the waterways until the wood was so thin as to admit rain water through it; they will attack the bungs of casks and create leakage; find out the soft parts of the knees or lining, and make a passage for themselves from one part to another. It further states that "the crew of the barque *Commodore*, of Hartlepool, have made a charge of incendiarism against rats. The vessel was loading a cargo of wood, and a conflagration broke out in the hold. At a Naval Court held on the 5th and 6th of August last, the witnesses examined were almost unanimously of opinion that a candle which was suddenly missed had been taken away alight by a rat and placed between the battens, thus causing the fire. Sailors declare that stealing a lighted candle is not an uncommon feat for a rat to perform; and if all the deeds in this line laid to the charge of these animals be true, they are quite capable of committing arson as well as larceny."

We can corroborate these statements from facts which have come under our own knowledge. There is no doubt that rats are the most destructive vermin met with on board ship, and have probably caused many a vessel that has left port thoroughly sound in hull to become unseaworthy. We have seen a leaden pipe belonging to Mr. Inman completely gnawed through by rats in their endeavours to get at the water—nothing seems to stop them. On board a ship on one occasion, some rat-holes were found, when the ship got into dry dock, eaten right through to the copper, and to prevent a recurrence of the same thing, a daily allowance of water was served out to them on the hatches on the 'tween decks, and they used to come as regularly to drink it as if they had signed articles, and considered it their right. On another occasion, during a long voyage, the water ran short, and the crew had to be put on an allowance of a pint a day. The rats gnawed through the leaden pipes, and the third officer, who had to bale the water from the tanks, says that they used to muster as regularly as the men, looking out for any drops that might be spilled; some of them dropped into the tanks, and a man was always sent down to get them out, and the rats would run up his legs and body. When the ship got to London, a number of skeletons were found at the bottom of the tank.

so that the crew had the satisfaction of knowing that they had been drinking all the time a mild infusion of rats, but none of them noticed any particular flavour in the water, nor did it do them any harm. No doubt, had they known what they were drinking, the imaginative faculties would have been strongly exercised, the water would have been pronounced disgusting, and probably there would have been a few cases of diarrhoea sickness, but "where ignorance is bliss, 'tis folly to be wise." Not only do these spoilers damage considerably the hull of a ship, but their destructive propensities are sometimes exercised aloft. A ship in Calcutta, on one occasion had her sails furled for a fortnight; when they were loosened, a perfect shower of rats, old and young, came pouring down on the deck, much to the astonishment of the men, and they had so gnawed through and left their marks on the sails that they were rendered useless. We have often heard of it's raining cats and dogs, but this is the first well-authenticated instance of a deluge of rats.

Rabbits are proverbial for their great capacity of producing their kind (to breed like a rabbit is a household saying), but their capabilities in this respect are as nothing in comparison to rats, who appear to have their organs of philo-progenitiveness developed to an inordinate degree. The brown rat will produce fifteen or more young ones at a lying-in, and will do this not once, but actually three times in a year, so that two rats will thus multiply themselves into from three to four dozen in the course of a twelvemonth. As they thus fulfil very literally the Scriptural command to increase and multiply and replenish the earth, it is easy to account for the swarms that are often found on board ship after a long voyage, and the extreme difficulty experienced in getting rid of them. An old sailor told us the other day that, on board an Indiaman under his command, the crew used to put a box on deck with some rice under it, supported by a piece of bamboo round which a string was tied; they would hold the end of the string in their hands whilst lying in their hammocks, and amuse themselves by pulling it every time some unfortunate rat ventured into this very primitive trap; they caught dozens in this way. When the cargo was taken out some thousands of rats were seen running about in all directions. The owners of all the Atlantic steamers employ a regular ratcatcher every time the vessel comes into port, and the number killed is fabulous. At sea they are sometimes destroyed by poison, but the remedy is worse than the disease, as they will creep into their holes to die, and their decomposing bodies will cause men literally to "smell a rat," and the result will be the rankest compound of villainous smells that ever offended nostrils. A plan which is sometimes adopted with great success is to smoke them out; a platform of mud is made at the bottom of the ship, on which fires are lighted

composed of charcoal, chilis, and brimstone. All the apertures for admitting air are then stopped up, and it will be found afterwards that the rats are congregated round the fire dead ; they will come out from their holes to take a fond farewell of each other, and breathe their last around the fire. A sharp Yankee skipper, whose ship was infested with rats, once hit on a cute dodge of getting rid of them. He hauled his craft alongside a British vessel loaded with cheese, and caused the plank connecting the two to be well smeared with red herrings ; the consequence was that the rats migrated in a body, attracted by the herrings and the cheese. No doubt the British master appreciated the kind attention.

Everyone knows that many superstitious sailors believe that rats will always leave a ship which is destined to founder. Now, there is no doubt that rats will leave a sinking ship ; they have been seen to do so by walking along the rope which fastened the ship to the shore, and also by swimming, but they only do this when the water has absolutely forced them from every other place. In the same way, it is said, that they always quit a falling house ; but this popular saying is founded on the obvious fact that when houses become old and tottering they are abandoned by human beings, and then the rats, finding no longer their usual subsistence, quit the tenement also. Both these superstitions are thus founded on fact, but that rats have any foreknowledge of the future and possess the wonderful gifts attributed to so-called spiritual mediums or clairvoyants, we are strongly inclined to doubt. It is owing to this notion of rats deserting falling houses and sinking ships that a person shifting from one party when it is low water and going over to the opposite side is invariably said to be ratting, and this is deservedly held to be the worst species of political crime of which a public man can be guilty. Not only is it quite possible that rats have set fire to many ships by carrying lighted candles, but it is a well-known fact that on shore many houses have been burnt owing to their nibbling at boxes of lucifer matches, and thus setting them on light ; this is given in the returns as to the causes of fires in the metropolis. The brown rat, which is now the prevailing species in England, frequently makes sewers or drains his principal haunts, and, by devouring putrefying substances, contributes materially to cleanliness and health. In the sewers both of London and Paris these animals exist in countless millions, and live, feed, and thrive there without any other store for their support. Thus it appears that rats, although very annoying and troublesome to the human race, yet have their part to play in the economy of nature ; they act as scavengers for man in cases where he cannot or will not play it for himself, and prove the truth of the lines of Shakespeare—

“ For naught so vile that on the earth doth live
But to the earth some special good doth give.”

But, although on shore they are thus extremely useful, it may at first sight appear rather difficult to name any possible benefit that can be derived from them on board ship. No doubt they are a great nuisance, and their absence would be far preferable to their company, but, as it is impossible to keep them away, the question naturally arises, can we not turn them to some account? and the chief object of the present article is to suggest a possible means of doing this, and we therefore boldly ask the somewhat startling question, why not eat them? and echo answers why not? Perhaps this proposal may alarm some timid minds, but on calm consideration it will be seen that there is no possible reason why rats should not make very excellent food, and that nothing but prejudice stands in the way of their being thus utilised. There is a well-known anecdote of a Frenchman, who was one day remonstrating with an Englishman for his scorn of French beef. "I have been two times in England," he said, "but I navère find the bif supérieur to ours. I find it vâry convenient that they bring it to you on little pieces of stick for one penny, but I do not find the bif supérieur." The Englishman, red with astonishment, exclaimed, "Good God, sir! you have been eating cat's-meat." It is true he had been eating cat's-meat, but it was quite evident that it could not have been so bad after all, as he considered it equal to the beef of his own country. The diversity prevailing in different nations in reference to articles of food seems to confirm the old saying that one man's meat is another man's poison. Many an article of food which is held in high esteem in one country is regarded in others with an abhorrence which famine can hardly surmount. The ancients, who carried epicureanism to lengths never dreamt of in Guildhall, thought the hedge-hog a tit-bit, and had a good word to say in favour of donkeys. Dogs they considered equal to chicken, and even cats were not despised. The pork which we eat with confidence they turned up their noses at, whilst they ate snails with a gusto we acknowledge in eating oysters. The Australian savages esteem frogs, snakes, large moths and grubs picked out of rotten wood as dainties, but are shocked at our eating oysters. The sailors in the English and Dutch whale ships do not eat the flesh of the whale, but those in the French whalers are said to make a palatable dish of it. Horseflesh, which is held in light esteem by Englishmen, is preferred by the Tartars to all others, and is now gradually making its way on the Continent. Many banquets have been given in France and Germany, the staple of which consisted of horse beef, and it was found impossible to distinguish it from ox beef. We know that the French make delicacies of frogs; and in China certain breeds of dogs, cats, and rats are regularly fattened for the public markets, and are the choice food of the epicure. The Chinese, indeed, indulge in a variety of food which would send the average Englishman

out of his mind. They not only delight in dogs, cats, and rats, but will eat shark's fins, bear's paws, salted earth-worms, Japan leather, birds' nests, and even living juvenile crabs. They evidently consider that "variety's the very spice of food that gives it all its flavour." In fact, it is all a matter of custom and of prejudice. There is no reason to suppose that the digestive organs of other nations are in any way different from our own, or their palates in any degree inferior. Douglas Jerrold mentions a story of a man who hated national prejudices, and invited an uncle to a French restaurant to dine 'em out of him:—"After dinner he said to him, 'What do you think of the French now, Uncle?'—'Not so bad,' he replied with a look of contrition; 'not so bad if they wouldn't eat frogs.'—'You recollect that third dish; delicious, wasn't it?' said the nephew. The old fellow smacked his lips with recollections of delight. 'In that dish there were two-and-thirty frogs.' The uncle insisted upon falling ill immediately, was carried home, went to bed, scratched his nephew out of his will, and died. Would it be believed a nurse was found to swear that in his last moments she heard 'em croak! See what comes of national prejudices." There is no doubt that cats are much more largely partaken of by the British public than they are at all aware of, and it is probable that the contents of many a so-called rabbit-pie, if endowed with the powers of speech, would answer, when questioned as to its former state, that it had once mewed. It is well known that rats are eaten as an ordinary dish by many nations—by the South Sea islanders, by many of the African tribes, by the Chinese, and even by the French. In China it is a common custom for the natives to come on board a ship entering harbour and give a few dollars for permission to catch rats for the purpose of eating them. They split them up, salt and cure them like herrings, and they may be seen hanging up to dry in the stern-sheets of their boats. During the siege of Paris no less than 80,000 horses were consumed, and at last dogs, cats, and rats were made use of. Cats were publicly sold at six francs each, and dogs at eight francs. What rats were quoted at is not stated, but they fetched their price. The following is said to have been the *menu* of a *dîner de siège* given by the Paris Jockey Club. It was entrusted to the famous epicure, the Baron Brisse, and consisted of the following items:—

First course.—Soup of slightly salted horse with vegetables; *ass* flesh cutlets with carrots; mule's *hier sauté aux champignons*; horses lights, with white sauce; *carpe à la matelotte*; fried gudgeons; celery heads with seasoning.

Second course.—Quarter of a dog braised; leg of a dog roasted; *rats* cooked upon the ashes; *rat pie* with mushrooms.

Dessert.—Dutch cheese, apples, pears, marmalade au Kersh, *gateau d'Italie*, au fromage de Chester.

The banquet, which was served in one of the principal establishments of the Chaussée d'Antin, is stated to have been a complete success.

The chief objection that may be urged against rats as an article of diet is the nature of their food; they are certainly not over scrupulous in this respect on land, and when compelled by stern necessity, will, like their betters, devour anything that comes before them; but it must be remembered that they do this because they cannot help themselves, "their poverty and not their will consents." If the opportunity be given them they are as fastidious in their tastes as aldermen at a Lord Mayor's banquet. Belonging to the same natural order as squirrels, rabbits, and hares—viz., the rodentia, they were evidently intended by nature to be vegetarians, and although, as a matter of fact, they are omnivorous animals, and occasionally indulge in animal food not altogether in the best state of preservation, it is morely because they have only Hobson's choice in the matter, and can't get anything better. Yet are they no greater offenders in this respect than pigs or ducks, who are well known as very foul feeders (pigs will eat any filth that is given them, and will not refuse human flesh), and are nevertheless highly esteemed in most civilized communities. Pheasants, fowls, and game of all descriptions are fond of worms, maggots, and other insects, and their flavour is improved thereby; why, then, should the unfortunate rats be alone visited with contumely and rejected with scorn and contempt? There is certainly one practical and not altogether sentimental objection that may be urged against sewer rats—viz., that they are liable to become the host of parasites. Thus, there is an hydatid, the *lysticercus fasciolaris*, met with in the liver of rats and mice, which is in fact a stray tapeworm, the *Toema crassicolis* of the cat become vesicular, and which may, unless its vitality be destroyed, develop into a tapeworm in the animal feeding upon it. Still we are all liable to contract tapeworm from measly pork and beef, and the liability may be easily obviated in all these cases by well cooking the meat. If the temperature be raised to 140° Fabr., it will ensure absolute extinction of life in these parasites, and this temperature is always exceeded in meat that may be considered well done. It is only by eating underdone and nearly raw flesh that tapeworm is ever developed in the human subject. But even if there be any rational reason in this objection, it does not apply to the seafaring branch of the species. On board ship their food is of the most luxurious and cleanly description; they gorge themselves on good tallow, rice, grain, and cheese, and there is no earthly reason why they should not be as healthy, and their flesh as of sound and wholesome a nature as that of an ox or a sheep. We have heard it said they are vermin, and therefore can't be good. What an absurd argument! for what's in a name?

"A fowl by any other name would taste as sweet,
So rats will still retain that luscious flavour of their own,
Though they be vermin called."

Again, it is said they are repulsive looking, and man throws them on one side by a natural instinct—prejudice again, rank prejudice! For our own part we cannot see anything repulsive-looking about them; they are certainly more comely than pigs, and not half so nasty looking as eels. It is well known, moreover, that rats are exceedingly particular (and the same cannot be said of pigs who wallow in the mire) in their ablutions, they invariably wash themselves all over after eating, just the same as a cat does by licking the paws—the sin, therefore, of uncleanness cannot be laid to their charge.

Perhaps our readers may say, it is all very well to advocate rats as food in print, but the writer would probably be the last person in the world to eat them himself. To this we reply, oh, incredulous reader, "lay not the flattering unction to thy soul," we plead not guilty to the soft impeachment. A few days ago we had six fine good conditioned ship's rats made into a pie in the most approved style by an artistic cook, and can assure our readers that it was most delicious. The flesh was about the same colour as that of a pigeon, and combined the delicacy and tenderness of a rabbit, with the somewhat higher and more matured flavour of a hare, and we are persuaded that if it had been placed on the supper table at a ball, the guests would have considered it a first-rate game pie. A distinguished retired naval commander, above the common prejudices of his kind, likewise partook of it, and pronounced it very good, and said he could make a hearty lunch of it. We gave the fragments that remained to a porter with a limited income and an unlimited family, and he was very grateful for the offering, and said he would like such a dinner every day. What his wrath would be did he know the contents, imagination shudders to contemplate! We know a master mariner who always has a rat for breakfast every morning at sea, and prefers it to anything else—he generally has it roasted. No doubt they would make remarkably good curry, and we should say that rat soup would be quite equal to hare soup.

It is well known that scurvy is caused, in a great measure, by the too exclusive use of salt meat, and that where there is no fresh meat or vegetables given, it is often impossible to prevent its occurrence, in spite of the daily issue of lime juice. This is, therefore, another reason why fresh rats would be a most important adjunct to the diet of sailors on long voyages; they would act as valuable anti-scorbutics, and we cannot help thinking that, if the unreasoning antipathy at present felt could only be surmounted, the British sailor would infinitely prefer them to the hard salt beef which at present

so severely taxes his digestive powers and wears away his teeth. For our own part, if our choice were limited to a piece of salt junk and a dish of good fat ship's rats nicely cooked, we should not hesitate for a moment, but should prefer the rats a thousand times over. We fear, however, that prejudice, superstition, and false sentiment has at present taken too deep a root in the minds both of landsmen and sailors to be easily eradicated, and that their tastes will require a considerable amount of educating before they will look at the matter through our spectacles, and be guided by the light of reason alone. Still, there is hope in the future when we remember the past. Tea and potatoes were long rejected, and the latter, Montaigne tells us, excited *l'étonnement et le dégoût* ; they have, nevertheless, become European food, and are now considered almost necessities of life.

There is a school of cookery established at Liverpool, and we would venture to suggest to the professors of the culinary art that they should exercise their inventive faculties in devising the best methods of preparing savoury and palatable dishes of this much neglected food, and then, by imparting their knowledge to their pupils, and showing a good example by publicly partaking of the preparations themselves, the process of educating the public taste in this direction would be fairly commenced. The result would, perhaps, be that in the course of a few years we might see on board sailing ships suitable pens erected, in which the rats may be kept for a short time, fattened up, and got in good condition for the table. On shore, too, we might in time come to see prizes given at our agricultural shows for the finest rats, as well as for oxen and pigs, and then by proper selection, according to Mr. Darwin's principles, the breed would no doubt be considerably improved. Who knows whether a reduction in the price of meat might not thereby be effected ? We would seriously call the attention of our political economists to the great rat question, and bid them consider the sinful waste of good human food which a mistaken national prejudice at present permits. There are thousands of almost starving people in our midst, and countless millions of rats only waiting to be eaten ; this should not be. As the French say—*Les préjugés sont des maladies de l'esprit humain*.

L.R.C.P., London.

NAUTICAL ASSESSORS.

IN our number for June last, we drew attention to the existing Constitution of Courts of Inquiry into Wrecks and Casualties, and to the duties of Nautical Assessors at investigations conducted before those tribunals. Our remarks were made in view of what was then regarded as approaching legislation, and although the expected reform in this important department of our merchant shipping law has been deferred, it is none the less important, and the necessity for insisting upon it none the less urgent. Inquiries of this nature have of late become very numerous, and it is of the last consequence that practitioners before these Courts, masters or officers who may be called to account for their conduct before them, and the public at large, should understand what are the powers and the functions of the skilled persons who are appointed to assist the Court on these occasions. This has become the more necessary, inasmuch as owing to the manner in which some Nautical Assessors have discharged what we presume they consider to be their duties, their functions have been openly challenged, and one or two scenes have recently occurred between practitioners and assessors in open Court, which are unseemly in any public tribunal, and by no means conducive to the proper administration of justice. The term Assessor means literally one who sits beside another; and applied to judicial proceedings, it signifies a person who sits beside a judge to aid him in the discharge of his functions. According to Sir T. Tomlins, the compiler of the "Law Dictionary," Assessors to judges in inferior Courts are "persons possessed of knowledge of law, appointed to advise and direct the decision of the judge," and a similar definition of Assessors is given by Wharton in his "Law Lexicon." In the superior Courts of Common Law and of Equity, the assistance of Assessors is not resorted to, although it may be frequently required. But the Trinity Masters in the High Court of Admiralty, the merchants who sit with the Registrar in that Court, the Assessors who sit with the Judicial Committee of the Privy Council on the Admiralty side of the County Courts, the legal Assessors who assist at the deliberations of Local Marine Boards, and the Nautical Assessors appointed under the Merchant Shipping Acts to assist at Courts of Inquiry, are all instances, and some of them of recent creation, of the manner in which assistance in technical matters is applied in the administration of justice. Properly understood and applied, that assistance is of great practical value. But there is a danger—by no means an imaginary one—of the functions of the Assessor being lost in those of the judge, the result being in such a case frequently absurd and always very mischievous. The "Nautical Assessor," properly so called.

is the creation of the Merchant Shipping Act, 1854. By Section 434 of that Statute, it is enacted that, "In cases where nautical skill and knowledge are required, the Board of Trade shall have the power either at the request of justices or a stipendiary magistrate, or at its own discretion, to appoint some person of nautical skill and knowledge to act as Assessor to such justices or magistrate, and such Assessor shall, upon the conclusion of the case, either signify his concurrence in their report by signing the same, or, if he dissents therefrom, shall signify such dissent and his reasons therefor to the Board of Trade." Finding that the appointment of one "Nautical Assessor" was not always sufficient for the purposes of investigation into wrecks and casualties, a provision was introduced into the Merchant Shipping Acts Amendment Act, 1862, by which for the word "nautical" were substituted the words "nautical or engineering," and for the word "person" and "Assessor" respectively, the words "person or persons," and "Assessor or Assessors" respectively, with the very important addition that no certificate of master, mate, or engineer should be cancelled or suspended "unless a copy of the report or a statement of the case upon which the investigation is ordered, has been furnished to the owner of the certificate before the commencement of the investigation, nor in the case of investigations conducted by justices or a stipendiary magistrate, unless one Assessor at least expresses his concurrence in the report." Now, applying the above-cited legal definition of the term "Assessor" to the "Nautical or Engineering Assessors" appointed under the provisions of the Merchant Shipping Act, we are at no loss to understand what are the proper functions of such persons. Their duty is to "advise and direct" the decisions of the judge or judges they are appointed to assist. This duty can be properly and efficiently performed without any participation on the part of the Assessors in the course of the procedure before the Court. As we understand the duties of Nautical Assessors having regard to the above definition and the fitness of things, it is that they should hear and carefully note the evidence adduced, and when the evidence is closed that they should confer with the judge and direct his mind by the aid of their technical knowledge to a sound conclusion. It is in this manner that the Trinity Masters who assist the Court of Admiralty and the Assessors who sit occasionally with the Privy Council in nautical cases, and with the County Court judges in the exercise of an Admiralty jurisdiction, understand and discharge their functions. Not so, however, with some of the persons who discharge the duties of Nautical Assessors to Courts of Inquiry. The remark is made with a reservation—for there are many of those gentlemen who have a most just perception of their duties and discharge them with excellent effect, but there are others to whom it applies with entire force. Some

Nautical Assessors think proper to arrogate to themselves the functions of counsel and of advocates, to examine, cross-examine, and re-examine witnesses, and even to start a theory of the casualty and endeavour to lead up evidence in support of it. This, of course, even if it were done with a knowledge and due regard to the rules of evidence, would be grossly improper. But when these rules are neither understood nor applied, and it is borne in mind that a master or officer is actually on his trial, his professional character and his means of livelihood hanging in the balance, and that owners and underwriters are also deeply interested in the result, this unauthorised and ignorant interference by Nautical Assessors in the proceedings before the Court is illegal, unjust, and, we may add, indecent. The abuse has no doubt had its origin in the weakness of the presiding judges, who, generally knowing nothing of legal procedure, and in many cases being utterly unacquainted with maritime law and with nautical affairs, are helplessly in the hands of the Nautical Assessors, who, in the treatment of witnesses, do precisely what they like. But this is not all. These Courts of Inquiry, besides elucidating the facts connected with maritime disasters, have the power of decreeing punishment. That is, or ought to be, the sole prerogative of the Court, who incur in the exercise of it a grave responsibility. But it is a prerogative which is too frequently usurped by the Nautical Assessors, who, if they do not actually fix the punishment, endeavour to enforce their views in respect to it on the minds of the Court. Magistrates—even stipendiary magistrates—are not always strong judges, and they are apt to surrender functions, however sacred, to those on whose technical knowledge they have any reliance. It occasionally happens, more particularly with magistrates new to these inquiries, that they do not know their own powers in this regard, or if they do, they hesitate to exercise them, and thus the finding of the Court on the facts, the punishment of the master or officers, and the framing of the report, which becomes a public document, and which may affect most seriously the interests of owners and others, become too often one and all the work of persons who have taken an active, and it may be a prejudiced, part in the inquiry, and who, potent as they may be as regards the result, incur no responsibility whatever. Can there be a greater travestie of justice? Of course the true cure for such abuses is to be found in the appointment of competent judges to preside at Courts of Inquiry into maritime casualties. No man—we say it advisedly—is fit to preside at these investigations who has not an acquaintance with the principles of maritime law, and if he has a practical acquaintance with nautical matters it will be a special addition to his fitness. Such a man would be able to judge for himself of the bearing of the facts adduced

in evidence. But in the meantime something may, and something ought, to be done by the department which, under the existing law, appoints Nautical Assessors, to prevent the usurpation by these persons of functions which do not belong to them, and which it was never the intention of the Legislature that they should possess. So long as they are limited to the discharge of their proper duties as advisers of the Courts on technical points, and these duties are efficiently discharged, Nautical Assessors may be valuable adjuncts to these Courts. Where those functions are surpassed the result is certain to be fraught with difficulty, and too often with danger, to the due administration of justice.

CERTAIN NEW FORMS OF LIGHTHOUSE APPARATUS.

By J. HOPKINSON, D.Sc., M.A.*

THE requirements of seamen, when lighthouses were first reduced to a system, were very different from what they are now. The earlier lighthouses were essentially beacons to warn the mariner of danger; to-day, perhaps a not less important function is to save his time by enabling him to navigate a dangerous coast with the same freedom and confidence night and day. This throws an additional responsibility on those who make and who have the control of lighthouses. The mariner relies upon the lights to lead him safely *through* danger, and it is essential that they shall invariably be exactly what they profess to be, and that they shall be so marked in their character that there shall be no excuse for any doubt or confusion.

The increase in the number of lighthouses has caused a difficulty in insuring that they shall not be confounded with each other. The existence of this difficulty is apparent from the defects of various expedients to which lighthouse engineers have reluctantly resorted to obtain necessary distinctions. In the most favourable circumstances, red glass absorbs nearly two-thirds of the light which would otherwise benefit the sailor. The use of colour is thus an extravagant expedient, for an equally

* A paper was read before the British Association at Bristol, by Sir William Thomson and myself, covering the same ground as the present, and expressing similar views to those now put forth.—J. H.

powerful white light could be produced with a much smaller consumption of oil. Still it has been frequently necessary to employ red glass even in revolving lights. It must be a strong necessity which makes lighthouse boards consent to have the brightness of their lights so heavily taxed. The first French Lighthouse Commission definitely excluded coloured lights from their scheme, but even France has had to give way. In an ideal scheme of lighting a coast, colour would only be used for marking particular directions from the lighthouse, as at Orme's Head, the Longships, and other places, but we should have no lights showing red, or alternately red and white, to all points of the compass. Another distinction which has found a great deal of favour is open, I think, to even graver objections than the one of colour—the fixed and flashing light. Here we have a light of the power of a fixed light during a greater portion of the time, but flashing out at stated intervals with the brightness of a revolving light. The essential *characteristic* of these lights lies in the combination of continuous light of a certain intensity, with flashes of a very much greater intensity. There must undoubtedly be circumstances of weather and distance in which the flashes alone can be seen, and the effect be similar to that of a revolving light, and be only distinguishable from it by the usually greater interval between the flashes. It is true the local knowledge of the seaman may remove the doubt, but on this the lighthouse engineer has no right to rely, and the fixed and flashing light remains open to the objection that in fair weather it appears as it is advertised to be, in foul it may simulate a revolving light, and may in extreme circumstances cause mistake and consequent disaster. The cost is that of a revolving light, but without its advantages. It is difficult to see why the ordinary intermittent light was not adopted instead of this dangerous combination.

Lighthouse optical apparatus may be broadly divided into two classes. the fixed, in which the light being condensed in altitude only, is sent simultaneously in all directions to the sea horizon; and the revolving, in which the lenses condense the rays in azimuth also, and as the apparatus revolves, cast powerful beams on the eye of the mariner at stated intervals, total darkness, with the exception of dim light scattered in the lantern, separating the beams of light. The former is open to one or two objections, the importance of which increases every year. There are no means of distinguishing one fixed light of the usual kind from another: as the demand for more frequent lights along the coast increases, this limits the use of fixed lights. On a very dark night, when the hulls and masts of vessels cannot be seen, there is some difficulty in distinguishing a distant fixed light from a nearer ship light or riding light. It has been urged as an objection to the now absolutely unnecessary increase in the power of ship lights, that they would thereby be liable to be con-

founded with lighthouses. When visiting the Dungeness Light, I had the opportunity of observing the magnificent electric lights of the South Foreland, distant twenty-two miles, behind the lights of vessels riding at anchor near to, and I felt that I could not instantly and certainly distinguish one from the other. Doubtless, the experienced eye of a seaman would have instantly identified the lighthouses, but perhaps the judgment of a landsman on the beach in a dark but clear night may be taken as a measure of that of a seaman on board ship in rough and rainy weather. For harbours, the fixed light is adopted in nine cases out of ten, and here an additional cause of trouble may arise to those unacquainted with the locality. Before the introduction of gas the harbour light was alone, and therefore unmistakeable; now it is sometimes almost lost amongst the gas lamps which illuminate the quay. Sir William Thomson has proposed to obviate these difficulties, whilst retaining the advantages of the fixed light, by improving the intermittent light, of which we have existing examples in Point Lynas, Anglesea, and other places, and diversifying it so that it might be applied to any or all of the fixed lights existing or to be constructed. His scheme may be best explained by reference to the light on the Holywood Bank, Belfast, which has been altered in accordance with his recommendations. This light is now distinguished by two short eclipses and one long, grouped together. The eclipses are produced by opaque shades revolving round the usual dioptric apparatus. The effect on the eye is as follows: bright $6\frac{1}{2}$ seconds, dark $\frac{1}{2}$ second, bright $\frac{1}{2}$ second, dark $\frac{1}{2}$ second, bright $\frac{1}{2}$ second, dark $1\frac{1}{2}$ seconds, then again bright for $6\frac{1}{2}$ seconds, the phenomenon repeating itself with a total period of 10 seconds. The three eclipses are easily described, and are instantly identified almost without thought. It is easy to see that the plan is as fertile as it is simple, and that it could furnish as many distinctions of fixed lights as can ever be wanted. Some difficulty was at first anticipated as to the possibility of adopting Sir William Thomson's proposal in the case of that important class of fixed lights in which certain bearings are marked by coloured light, the coloured light being made of equal power with the white by utilising light which would otherwise be wasted on the land. But through these difficulties the way is now clear, and it may be safely asserted that there is no mechanical or optical difficulty in producing Sir William Thomson's eclipses in any case to which our lighthouse boards may think it expedient to apply them.

But revolving lights, in addition to their distinctiveness, have a recommendation in their great power. The use of red in revolving lights sufficiently proves that there is need for increasing the number of variations in this class. To meet this need I have designed forms of apparatus which give, instead of a *single* flash at stated intervals of 30 or 60 seconds, *two*, *three*, or, if required, *four* flashes in rapid succession, forming a *group*

recurring at suitable intervals, such lights would naturally be named *double*, or *triple-flash* lights, or revolving lights with *double* or *triple* flashes at intervals of 30 or 60 seconds, in contradistinction to the old revolving light, which would be distinguished as having a single flash. The apparatus is perfectly simple, and costs very little more than the ordinary revolving light. In the usual eight-sided light the rays are condensed into eight beams, the axis of which are at equal intervals of 45° . The double-flash light has twelve sides, giving twelve beams of light, but these are not spaced at equal intervals, but are grouped together in pairs, the axis of the lenses being alternately at intervals of 15° and 45° , if, then, the apparatus revolve in six minutes, as will be the case at the Little Basses, we shall have a powerful beam of light thrown to the eye, then a second of equal power, the two occupying about 22 seconds, then 38 seconds of darkness, to be followed by another group of beams of light. The triple-flash light is very similar, but has fifteen sides, five groups of three each.*

There are several points of view from which the efficiency of a light may be judged, and it may be well to compare the new forms with the old in different aspects.

It is desirable that with a given consumption of oil the light should be as powerful as possible, or that no more oil than is absolutely necessary should be used to produce a light of a certain intensity. On the other hand, it is well that the light shall not be too long invisible, in fact, that it shall be seen for as many seconds as possible in each minute. These two conditions are exactly opposed, for as we condense more light into each beam by increasing the size of our lenses, we diminish the duration of brightness in comparison with that of eclipse. With a given illuminant. we may take as a measure of brightness sixty divided by the number of seconds the light is visible in each minute. Thus each panel of an eight-sided revolving light condenses light which would be dispersed over 45° of the horizon into about $4\frac{1}{2}^\circ$, it can thus be only seen during six seconds in every minute, and its power is ten times that of the corresponding fixed light. In Sir William Thomson's eclipsing system, the oscillations are so short that the light may be considered as continuously visible; they will also have the same power as the fixed light from which they are formed. They are in fact fixed lights furnished with distinguishing characters. The double and triple-flash lights on the other hand, are modified revolving lights. Let us compare the eight-sided revolving

* A triple-flash light has for some months been exhibited on the Royal Sovereign Light-vessel, in this case produced by parabolic reflectors. And Messrs. Chance Brothers & Co., have completed a Second Order Dioptric Triple-flash Light for Mexico, and have in hand a First Order Double-flash Light, intended for the Little Basses, Ceylon.

light, giving a flash every minute, with the double and triple-flash lights, giving respectively a group of two and three flashes every minute. The eight-sided light if it were white, would have a power of ten, taking the corresponding fixed light as unity, but nearly two-thirds of this light is intercepted to make the light red. Its power will then be represented by a little less than four. The flash will also last but six seconds, and this will be the whole time for taking the bearing of the light until fifty-four more seconds have elapsed. In a double-flash light we have 30° condensed into $4\frac{1}{2}^\circ$, thus the intensity will be represented by $6\frac{2}{3}$, whilst the distribution of the light and darkness will be very favourable, the individual flashes will last $4\frac{1}{2}$ seconds, they will be separated by an eclipse of $10\frac{1}{2}$ seconds, and there will be a long interval of forty seconds between the groups. The two flashes will be almost as convenient for taking a bearing as a continuous light lasting twenty seconds. Turning to the triple-flash light, we have a power of $5\frac{1}{2}$, whilst the individual flashes will last nearly four seconds, and the group will occupy twenty-four seconds, giving an admirable opportunity of determining the direction of the light with such accuracy as the circumstances admit of. It may be said, generally, that the double and triple-flash lights rank next to the eight-sided revolving light in power, when the flashes of the latter are undimmed by the use of colour, whilst they rank before all other revolving lights in the facilities they afford the mariner of making an accurate estimate of his position.

Perhaps the most important question which can be asked, regarding any new distinctive light which may be proposed is, Is it perfectly simple and easy to comprehend? Can it under any circumstances be mistaken for some other form of light? At first sight it would appear that both plans here described are open to the charge of complication; but a moment's consideration shows that this is not the case. It is easier to recognise a group of two or three flashes from a single one, or to distinguish between groups of three eclipses—say, “short, long, short,” from “short, short, long,” than to ascertain certainly the period of a revolving light. Again, it may be urged as an objection to groups of flashes that some circumstances may cause the observer to miss one flash in the group and mistake a double for a single, or a triple for a double-flash light. Again, I appeal to time-honoured experience. It is conceivable that by the obliteration of a flash a half-minute light may be taken for one having a double period. If such a mistake occurred, it would be longer before it could be rectified than in the case of the double-flash light; but I am not aware that any such inconvenience is actually felt.

The advantage lies wholly with the new lights; a group of three flashes or eclipses would be recognised without hesitation by a savage

who was utterly ignorant of any means of measuring time, whilst the difference between thirty seconds and a minute would be without meaning to him. There is no complaint, nor cause for complaint, of the best revolving lights on the score of simplicity, and certainly still less will there be in the new combination.

It is worthy of notice that, if a coast were lit on a system based on a use of grouped flashes, or grouped eclipses, with the appearance of the light could be made to correspond the blasts of the fog-horn; a group of three flashes, at intervals of thirty seconds, would naturally be used in conjunction with a fog-signal sounded three times in succession at the same interval.

EMIGRATION TO SOUTH AMERICA.—No. II.

THE ARGENTINE REPUBLIC.—*Continued.*

THE immigration laws of the Republic are of the same liberal and enlightened character as most of its other laws, but it is unfortunately inherent in the Republican form of government to be enabled to enact unexceptionable laws, but to encounter the greatest difficulty in their proper execution. The reason is simple; they are the work of the educated men of the community, who have wealth, leisure, and a true patriotic understanding of the principles of their form of government; but are executed as a rule by adventurers, who possess neither one nor the other, and in almost all instances make patriotism subservient to personal interest, or whose notions of liberty result in anarchy, and its inevitable consequence, military despotism.

Bearing these circumstances in mind, I will now proceed to the particular law relating to immigrants. The following are the chief provisions in that recently proposed to Congress, and intended as the first step to a more extended and improved system of immigration, immediately under Government control, and if the emigrant could only be assured that it would be faithfully carried out, there would be nothing left to desire :—

“ARGENTINE HOMESTEAD LAW.

“ Art. 1. The Government will proceed to foment immigration and the establishment of agricultural colonies by the following means—

“ (1.) Advancing the passage money for all such families in Europe as accept the engagement to settle in one of the proposed colonies.

"(2.) Giving free land grants or selling them, land to be paid for by instalments.

"(3.) Providing free passage from the place where they land to their destination.

"(4.) Advancing them provisions for one year, besides seeds, implements and cattle.

"Art. 2. The land-grants will be provided out of lands in Federal territories, or such as the provinces or private individuals may offer.

"Art. 3. The carrying out of this law will be entrusted to the Department of Immigration and the Office of Lands and Colonies, whose duties are hereafter expressed."

"Colonization, Land Grants and Reserves.

"Art. 21. When the Government and Colonial Office have fixed on a territory for colonization that has already been explored a surveyor shall be sent to measure it out, and a commissary and staff to take charge of it.

"Art. 22. As soon as a section is thus marked out into farm lots a house is to be erected for the officials, where 50 families can be accommodated on arrival, and the provisions, &c. duly stored there are to be distributed among the settlers.

"Art. 23. The section being thus ready to receive the settlers the Colonial Office and Immigration Department will send the families thither.

"Art. 24. The first hundred settlers or heads of families will receive free farm-lots of 200 acres each, in alternate lots.

"Art. 25. Those who may require it will also be provided with house, implements, cattle for breeding and ploughing, seeds and support for 12 months. In no case shall any family have to pay more than £200 sterling for all such advances and passage from Europe; reimbursements to be made in five annual instalments, beginning at the end of the third year.

"Art. 26. The other farm-lots will be on sale at a dollar (four shillings) per acre, payable in 10 yearly instalments counting from the end of the second year; settlers may buy half or quarter lots, but no one more than four lots (800 acres).

"Art. 27. Buyers of such lots will be entitled to the advances and assistance as specified in Art. 25, on the same terms.

"Art. 28. The town-lots of 56 by 56 yards may be bought at two dollars (eight shillings) each.

"Art. 29. Notwithstanding the above clauses it shall be lawful to put up to public auction such farm-lots and town-lots as are undisposed of, according as the growth of the colony may suggest. The upset price must always be as stipulated above (a dollar per acre for farm-lots, and two dollars for a town-lot).

" Art. 30. Outside farm-lots reserved for municipal use shall be sold as the population increases. Meantime the Municipality may charge so much per head for the grazing of same.

" Art. 31. Buyers of town-lots must fence and build on same. Farm-lots shall be only given or sold on condition of cultivating same for two consecutive years, pending which the settler will receive a provisional warrant specifying his lot and the obligation he undertakes. At the end of two years his titles will be given him in due form. Any lots not cultivated for two years shall return to Government.

" Art. 32. Farm-lots given or sold to settlers shall be held as mortgaged to the Government until the settler pay off what he may owe the Government.

" Art. 33. Government will have the right to reserve the whole or any part of any section when such may be advisable for the national interest, either on account of woods, rivers, mountains, etc., or because of the physical nature of the locality.

" Art. 34. Farm-lots shall be given or sold subject to the right of making high-roads or by-roads as expressed in this law. Both farm-lots and town-lots may be at any time expropriated by the nation for roads or other purposes of public utility.

" Art. 35. Alternate sections shall be left undivided and simply marked out at the four corners, to be set apart for the following purposes—

" (1.) For the establishment of joint-stock colonial settlements.

" (2.) For the reduction or civilization of Indians.

" (3.) For pasturage.

" Art. 36. Any joint-stock company may start a colony on the following basis—

" (1.) Nothing shall be contrary to the present law.

" (2.) They must introduce 140 agricultural families within two years.

" (3.) No farm-lot sold or granted shall be less than 100 acres.

" (4.) They must provide for such settlers as require it a house, implements, cattle for ploughing and breeding, seeds, and support for at least 12 months.

" (5.) Only 20 per cent. profit to be charged over and above the real cost of such advances, and interest not exceeding 10 per cent. per annum.

" (6.) Settlers to reimburse the company in yearly instalments, and these not to begin before third year.

" (7.) All contracts with settlers to require the approval of the Lands and Colonial Office.

" (8.) The company to be subject to all laws and regulations touching the management, colonization, and development of the territories.

" (9.) The company to expect no other assistance from the National

Government than a free passage for their settlers from the point where they may land to their place of destination.

“ Art. 37. The National Government will do its best to bring Indians to settle on sections set apart for the purpose, establishing missions to attract them gradually to civilized life, and bestowing farm-lots of 200 acres on such families as evince a disposition to work, besides suitable assistance in such manner as, if possible, to enable them to repay such advances. Administrators of colonies shall also endeavour to obtain Indian settlers by offering them the same advantages as white men after they have gone through a period of apprenticeship with one or other of the colonists or in aiding the Administrator.

“ Art. 38. Sections not given out for colonies or Indian reductions may be rented for pasturage, divided into four or more lots as the nature of the ground may suggest, the rent to be fixed by the Colonial Office in accord with the National Government. The tenant or squatter may at any time be required to give up the land if required for colonization; in such case he will receive gratis a farm-lot of 200 acres around his house, and may buy three more lots. Any section given out to squatters shall be under the jurisdiction of the nearest colonial section, until cut up for a colony and endowed with its own authorities.

“ Art. 39. The first sections to be marked out and colonized shall be those where already there are some inhabitants, and these will receive a free lot of 200 acres for each male adult or head of family, besides the right to purchase three other lots.

“ Art. 40. Actual squatters on Federal lands by grant of Congress shall proceed within three months to register their rights at the Lands and Colonial Office. Parties holding by any other title shall likewise present themselves in the same period to have their titles examined.

“ Art. 41. The National Government is hereby authorized to make grants of Federal lands unmeasured for colonization to such joint-stock companies as may solicit same on the following conditions—

“ (1.) The area never to exceed 270,000 acres, that is to say, 422 square miles or 45 square leagues.

“ (2.) The company to be always subject to the provisions of this law, and establish its colonies on similar basis.

“ (3.) At least 500 agricultural families to be introduced within four years after date of concession.

“ (4.) The company to bear all expenses, such as exploring, measuring and marking out the ground, and the National Government only to convey the immigrants free from where they land to their place of destination.

“ (5.) The company to bind itself to fulfil the stipulations of items 3, 4, 5, 6, 7 and 8 of Art. 36.

"Art. 42. The company to forfeit 20,000\$.f. if it fail to carry out its engagement in the given time ; bail must be entered into for this purpose.

"Art. 43. Henceforward no titles shall be valid unless in conformity with this law, or in case of special concession by Congress."

"Fomenting National Colonies.

"Art. 56. The National Government will pay each colonist after a colony has been six years established a premium of 10\$.f. (£2 sterling) for every thousand trees at least two years old, planted on his ground.

"Art. 57. Every colony shall be exempt from land-tax (*contribucion directa*) for 10 years from date of establishment.

"Art. 58. All colonies on the Patagonian coast south of the San Jose Peninsula shall be considered free ports till 1884, paying no import or export duties on merchandise. Moreover, in all the colonies it shall be lawful to import implements, arms, seeds, baggage, &c., for immigrants, duty free.

"Administration of Territories.

"Art. 59. All civil, political, and military authorities of the territories shall hold office from, and be subordinate to, the national Government.

"Art. 60. Whenever a section is set apart for measurement and distribution among colonists the Land and Colonial Office shall recommend Government a suitable person for Commissary, who will have a salary of \$.f. per month and exercise all military and police authority, having, moreover, a secretary with dols. salary per month, and 10 workmen or soldiers at dols. each.

"Art. 61. The Commissary will have to protect the colonists, keep order, put the settlers in possession, keep a statistical report of the colony, and represent it with the National Government.

"Art. 62. When 50 families are settled down they shall proceed to elect from among themselves a justice of peace and five town councillors, who will have charge of the direction, justice, education, public improvements, security and progress of the community, within the attributes which will be determined in the regulations for governing Partidos.

"Art. 63. The colonists shall have military organization merely for their own protection, under command of the Commissary, the National Government providing all the arms and ammunition requisite.

"Department of Immigration.

"Art. 64. This department will consist of a Commissioner-General and the same staff as at present, according to the existing budget, but may be augmented as the service requires.

"Art. 65. It will form a dependency of the Ministry of Interior, and its attributes will be enlarged as follows :—

"(1.) To send proper agents to Europe and North America to select the kind of colonists required.

"(2.) To arrange with Government about the best way of bringing out families, and dictate proper regulations as regards health, security and comfort on the voyage.

"(3.) To contract with one or more companies for their conveyance, subject to approval by Government.

"(4.) The Commissioner-General to choose the best sites for colonization, and send families thither.

"Art. 66. Emigration agents abroad not to have a fixed residence, but go about from one country to another, the Government even suppressing those in some countries and appointing additional ones for others, as may seem fit.

" Given by Congress this day of 1875.

" SIMON DE IRIONDO,

" Minister of Interior."

If this project really becomes law (which I presume it will, as it has already passed one section of the Legislature), and the Government will retain its direct control and responsibility for each step in the emigrant's course, from the very moment that he leaves his country, until he is properly located in his adopted one, success will attend its efforts. It must be remembered that it is not sufficient to imitate the example, admirable as it is, of the United States. That country obtains the greatest part of its immigrants from the most populous country in Europe, whose people are ethnologically their own, of the same race, religion, laws, and customs, and who have proved themselves the best adapted as colonists, of any nation under the sun; whereas, with the exception of the few Spaniards obtainable from so thinly populated a country as Spain, all the immigrants to the Argentine Republic are foreigners, under conditions diametrically opposed to those of the immigrants to the United States. I point this out as a difference and a difficulty, not insuperable, but one which requires care and attention, and the Argentine Government should, as a first step, declare itself responsible for every act of the agents, whom it proposes to employ. Hitherto it has delegated or sold its control to speculators whose aim has been blood-money, indifferent to the sufferings of their dupes, or to the consequent disappointments and heart-burnings which their failure entails upon the Government which trusted them. Whatever offers are put forth by agents assuming to be employed by the Argentine Government, the intending emigrant should first of all insist upon seeing their credentials, and having them acknowledged by the Argentine Minister in London. I have thorough faith in the integrity of the Argentine Government, and its unfeigned and patriotic desire to

obtain useful emigrants and to treat them well, but its innate weakness, and its difficulty in finding honorable agents to carry its desires into effect, may mar its best intentions. It appears to me, that the event of failure of any of its promises, should be specially provided for, and an indemnity, equal to the emigrant's loss of time, and of breaking up his home should be paid him, and, should he require it, a free passage to his native land given him, and all this under guarantee of the Government. This is the more necessary, for during the past year hundreds, I may say thousands, of European emigrants have returned to their respective countries. Every steamship which has recently left the Republic, has carried back hundreds of them and at their own expense; many even seeking in the unhealthy climate of Brazil, where life is comparatively safe from outrage, as a refuge from the disappointments which they have suffered in the River Plate. This may be partially accounted for, by the commercial depression which the country has suffered in common with most others, during the last two or three years, and by the South American States more than any others. Indeed so general has this depression been, that South America may be said to be in a state of liquidation; but this would not have sufficed to account for the returning wave, which introduced to the Argentines the hitherto unknown word "emigrant," as a rival to the accustomed one of "immigrant." Other and more vital causes have influenced this extraordinary exodus; the heartless manner in which the immigrants have been treated in Paraguay, the extreme expense of living in the town, the insecurity of life and property in the country, and the utter inability to obtain justice even for the most frightful outrages. I should be sorry, indeed, to pronounce judgment upon a nation from isolated cases of atrocity, but they are of such frequent occurrence, that in saying all I can in favour of the Republic, it is only fair to the emigrant to caution him upon the unfavourable, and the cases which I am about to cite are perils to which every man who settles in the interior is subject. I suppress names for obvious reasons.

An English gentleman, a widower, purchased an estancia for the purpose of sheep farming, to which he retired with his only daughter, a young lady of nineteen years of age. Six ruffian Gauchos called there upon the plea of getting something to eat, and whilst the food was being prepared, they suddenly attacked the gentleman, cut his throat, and ripped up his stomach; they then violated the young lady, cut her throat, and left the bodies to be devoured by swine, as they indeed were.

Now it will no doubt be urged, that atrocious crimes are perpetrated in all countries, which is incontestible, but in all those with any pretensions to civilization, the law takes immediate cognizance of them, seeks out the guilty, inflicts summary punishment, and compensates the victims; but no steps were taken in this case, or steps so dilatory and unsatisfac-

tory, that it became a subject for diplomatic interference, and only after two years of pressure, one of the rascals was shot at Rosario, and another sentenced to fifteen years imprisonment, which he will certainly never suffer.

In Tandil forty Europeans were murdered, one man only of the perpetrators, ever suffered for the crime, and he by lynch law, and not judicially. Last year only a young Irishman and his wife were visited at their rancho by ten fellows, dressed as soldiers, and accompanied by an officer. They asked for refreshments, and whilst the man was preparing them they cut him down. His cries brought his wife (who had hidden herself under some wool) from her concealment. The officer immediately fired a revolver at her, but missed her. He then ordered her to be secured to her bed, and there they all outraged her, although she was some months gone with child. They wounded her slightly with their knives to overcome resistance, and, that failing, they brought in her wounded husband, cut his throat, and ripped him up before her face. They left her for dead, but she managed to escape to a neighbour's; and after her confinement went up to the city for redress. None could be at first obtained, although the names of two of the supposed perpetrators were offered to the authorities. Indeed, no answer was vouchsafed to the complaint, which again had to be taken up diplomatically; and, after six months' labour, an indemnity of £50 and a free passage to England was offered to the poor young widow and child, for the loss of husband, father, home, and the horses and sheep of which they were robbed, but not a step was taken for the punishment of the murderers.

Another Englishman was shot dead for expostulating with some soldiers who wished to take his horses. There was no punishment proposed, still less inflicted, upon the assassins; but, again under diplomatic pressure, the Government paid the widow £240, and gave her a free passage to England, as an indemnity for the loss of husband, horses, sheep, and home, which had been utterly sacked during her absence at the capital to obtain justice.

These offences are always accompanied by robbery, are of constant occurrence, and almost invariably go unpunished. The Argentine press is always calling the attention of the Government to them; but its apathy, or want of power, and the dilatory procedure of all Spanish law, render such warnings nugatory. The consequence is that migration from the Republic, is rivalling in numbers migration to it, and unless some stringent laws are enacted, and loyally put into execution for the security of life and property, all the natural advantages of a noble country will be sacrificed, and the stream of emigration closed to it for ever. The perpetrators of these crimes are not the Indians, but the Gauchos, an ignorant and barbarous race, the peasantry of the country,

who are so accustomed to bloodshed that they are utterly indifferent to it; and when it is considered that twelve millions of sheep are slaughtered by them annually, besides oxen and mares, it is not to be wondered at. The victims of these crimes are usually Irishmen and women. They it is, who trust themselves amongst the Gauchos, and by their hard labour and exemplary conduct gain an independence, and, in very many instances, large fortunes. The greater part are from the counties of Longford and Westmeath, and it is impossible for me to speak too highly, of the manly resolution with which they encounter the difficulties and privations of their first settlement; the provident manner in which they live after acquiring their first property, and their peaceful behaviour as good citizens. They appear to have left the ungovernable character of their race at home, and if any fault is to be found with them, it is that they are too harmless, and thus encourage outrages upon themselves by the savages who surround them. They possess, however, one very considerable advantage in having a body of Irish clergy entirely devoted to them—gentlemen, whose purity of life and sense of duty are patent to all who have known them—and, in addition, the good and gentle ladies of the Irish convent, who are a blessing and example to all who need them.

An existing proof that I am correct in attributing murder and rapine to the Gauchos, and not to the Indians, is the Welsh colony of Chuput, in Patagonia, which is surrounded by the Pehuelche Indians, and, although the colony was founded in 1865, it has been entirely unmolested by them. On the contrary, they have frequently in times of scarcity supplied the colonists with provisions. Chuput has nevertheless never flourished, nor is it likely to do so. It was founded by a Mr. Lewis Jones for the sentimental purpose of perpetuating the Welsh language. What other object Mr. Jones may have had in view it is impossible to conceive in fixing upon a remote spot, in a country exclusively inhabited by a race which he knew was barbarous, and in all probability hostile, where the soil was notoriously poor and unproductive, and communication with the outer world unknown. Perhaps these were to him recommendations. Here no one was likely to intrude upon the chosen people, and if he had taken them amongst other colonists, they might have acquired their languages, and thus contaminated the purity of their own pre-Adamite tongue. Men will do queer things for an idea, so Mr. Jones, like Moses, left his flesh pots, placed himself at the head of his people, 180 men, women, and children, crossed the sea, and launched them in the deserts of Patagonia. The Argentine Government proved extremely liberal. Too happy to get anyone bold enough practically to take possession of a disputed territory in its name, it expended £2,000 in establishing them, allowed them to govern themselves, and to cultivate as much land as

they pleased; but two years of hardship were sufficient to cause the colonists to talk of abandoning the settlement, and the Government again came to their rescue, sent down seeds, &c., gratuitously, and established a monthly schooner to run between Chuput and Buenos Aires; but, notwithstanding all this, the place, as might have been expected, has never flourished, and now, after ten years of unmolested existence, self-government, and public aid, it numbers but thirty houses, one chapel, 200 cows, 100 horses, and 120 colonists.

The Government, ever anxious to people Patagonia, has again endeavoured to bolster up the colony. It has granted a concession to a firm to bring out 125 Welsh families within four years, to each of whom 200 acres of land are to be given; but I warn them to beware, to judge of the future by the past, and to rest assured, notwithstanding all the inducements which may be held out to them, that if, after ten years of Government support and friendly intercourse with the Indians, the result has been an actual diminution in the number of colonists who originally went to Chuput, there must exist physical and other difficulties which are not to be surmounted.

I have said that the Argentine Republic is beyond all comparison the country best adapted to European emigration of all the South American States, and I will add that the best of all European emigrants for the Argentine Republic are the Italians and the Spanish Basques. If its rulers would only carry into effect its proposed immigration laws, and will enact and execute the punishment of death for murder, patriotically and rigorously inflicting it upon all assassins, whatever their position in society or political party, the Italians can find no better home, or the Republic better citizens, men and women who bring all the physical force and beauty, and all the refinements in the arts and sciences for which their race is so conspicuous in Europe. And why should the Republic which has shaken off so many of the prejudices of the mother country, adhere to those of the sister Republics of the Latin race, whose great hallucination appears to be that it is a proof of liberality and humanity, to abolish the punishment of death, even in the lawless and ungovernable phase of peopling their countries with the outpourings of other and alien lands? What does the abolition of the punishment of death mean? Practically the extension of the infliction of death, or, instead of one executioner, every man his own executioner. During the year 1874, 226 persons were convicted of murder. None were, of course, executed. Supposing that these crimes were not confined to the city of Buenos Aires, but extended over the whole province, which contains about 500,000 inhabitants; compare this for the same period with England and Wales, containing 26,000,000 inhabitants, twenty-five persons only were convicted, and sixteen were executed for murder, and

say in which country life was most secure, or in which death was most frequently inflicted. In point of fact the punishment of death for murder should never be abolished, but left to abolish itself; for when, through the extension of education and civilisation, assassinations ceased, the punishment would naturally and logically cease also.

I have now, I think, given the "emigrant" all the information necessary to guide him respecting the Argentine Republic, and I would ask him what advantages exist in it, which are not to be found in our own magnificent Colonies, and our kindred United States of America? An Empire upon which the sun never sets, obviously possesses every variety of climate, and every sort of production, animal, vegetable, or mineral; let him choose from among the constellations which surround the sun of Great Britain, that best suited to his choice, and there help in the formation of new terrestrial systems, as the grand luminary, the United States, has already done; there, in any of them, under laws and institutions which mean what they say, he will enjoy political and social freedom, security of life and property, religious equality, and everything that makes life worth possessing, and withal, remain a citizen of his own noble country, or should he choose the United States, will almost imperceptibly become a citizen of one, no less noble.

In following this advice he runs no risks, no false promises will be held out to him, a perfected system of emigration will protect him on his voyage to his destination from the perils and discomforts of the sea, and from embarrassment and difficulties upon his arrival; he will not have to fear revolutions, civil wars, the outrages of fanatic mobs, or wrongs without redress; his ties with his native land will not be broken, and his parents, brothers, and sisters made foreigners to him and he to them. I therefore say avoid all foreign emigration.

AMERICAN STEAM FERRIES.—IV.

THE NATIONAL LINE.



THE year 1863 might well have been considered most unpromising by persons who, under ordinary circumstances, had convinced themselves that a great deal of money was to be made by engaging in the trade between Liverpool and New York and Boston. It was the year in which commercial men in the Northern States were distracted with apprehensions for the future of the Union, when trade, except in war material, was practically at a standstill: when the star of the Southern States was in the ascendant, and in which

General Grant, although he had taken Vicksburg, had not yet been appointed, through the foresight of Stanton, and the practical wisdom of Lincoln, to the command of the Federal army. Such a period was, however, chosen by a little knot of far-seeing commercial men in Liverpool, for commencing the operations of the National Steamship Company, the subject of this article. That they have been more than justified by the result is matter of notoriety in Liverpool and elsewhere, and the success they have commanded is at once a testimony to their pluck and to their commercial foresight.

It is somewhat singular that the National Steamship Company should have been the first, and for some years the only steamship company trading across the Atlantic between Liverpool and the States, established upon the principle of limited liability. A little reflection will, however, supply the explanation. The success of the original trade had been so great and so splendid, that those who were willing to go into such speculations, wished to secure to themselves and their immediate friends all the results of their enterprise. This idea has since been somewhat modified by competition; but the most recent and striking example of it is to be found in the history of the unfortunate South Wales Atlantic Company, which traded between Cardiff and New York, and which is now in liquidation. The original company was formed on the joint-stock principle, with the liability of the members unlimited; and although events modified the views originally taken, there is little doubt that the idea that a little gold mine had been discovered, was at the bottom of the first idea.

The career of the National Company testifies to the fact—if any testimony were wanted—that a steamship company, formed upon the principle of limited liability, can be well and efficiently worked. The National Steamship Company of Liverpool was started with a capital of £700,000, and in a recent year its gross earnings actually exceeded that amount. It has not only paid good dividends, but during the years of its trading it has accumulated an insurance fund of £200,000, while the property of the Company was recently valued at no less a sum than £1,200,000, showing that during the years of its trading the company has increased the value of the concern by £700,000, equal to the amount of the original capital.

It is not possible to have figures which speak with greater eloquence as to the manner in which the fortunes of the National Company have been guided, and great credit is due for the success which has attended the company to the Chairman and Vice-Chairman, Mr. William Rome and Mr. Charles Edward Dixon, both of Liverpool. The practical working of the line has, however, fallen principally into the hands of Mr. W. B. Macalister, the general manager, who possessed the great advantage of an intimate knowledge¹ of the Transatlantic traffic acquired in the

service of the Cunard Company, which has been before described as the pioneer company. It is not too much to say that Mr. Macalister's training with the Cunards has had not a little to do with the excellent fortunes of the National Company.

In addition to the difficulties caused by the critical period chosen for launching the Company, the directors had to face the fact that they could not expect anything from the mail subsidies which had been so useful in assisting the infancy of another company. They had also to compete with exceedingly powerful rivals. It was necessary, therefore, that the Company should strike out a line for itself, and this was done. A decision was made that the line should consist of boats not built so much for great speed, but capable of carrying enormous quantities of cargo without at all interfering with the comfortable arrangements for passengers. This was the model adopted, and experience has shown that it has never been necessary to depart from it. The peculiar nature of the trade conducted by this Company induced the directors last year to make proposals which caused a temporary collapse of the conference of steam shipowners in Liverpool, by which the passenger and goods rates between Liverpool and New York are regulated, and in the end it was agreed that the National Company should be permitted to carry at somewhat lower rates than its competitors, which pay regard principally to speed. One result of the kind of trade established by the National Company is, that to this day the vessels employed are among the largest engaged in the Transatlantic traffic.

The Company commenced its operations in 1863 with three of the largest vessels then afloat—namely, the iron screw steamships the *Louisiana*, the *Virginia*, and the *Pennsylvania*, names which might have led to the supposition that they were intended to trade between Philadelphia and the ports further south, instead of with New York. They were respectively of a gross tonnage of 3,000, 3,500, and 3,500 tons. In the course of the following year the fleet was increased to six vessels, with which number it is estimated that a weekly service between this country and the United States can be maintained. These vessels were the *Erin*, the *Queen*, and the *Helvetia*, each of a tonnage exceeding that of the pioneer vessels. The working of these vessels quickly proved that the calculations of the directors of the National Line, that boats of great cargo capacity, and ample passenger accommodation, could do a large and a profitable trade were correct. When it is remembered that the operations were carried on during the two closing years of the war, and consequently during the period of the greatest depression, the success which was so soon achieved can be regarded as little less than marvellous.

After two years' trading only, it was found that the then existing fleet of the National Company was insufficient for the commerce which had

already grown up. Two other vessels—namely, the *England*, of 4,900 tons, and 600 horse-power, and the *Denmark*, of 3,724 tons and 350 horse-power, were added to the line in 1865. In the following year, so quickly was the trade developing, that the *France*, a vessel of 3,572 tons and 450 horse-power, was put upon the line. From 1866 to 1868 was a period of progressive working, and in the latter year the fine ship the *Italy*, of 4,169 tons and 500 horse-power, became one of the National liners. With regard to the *Italy*, it should be mentioned that it was the first Atlantic steamship in which engines upon the compound principle were used. The year 1869 was marked by the addition of the *Holland*, a vessel of 3,847 tons and 350 horse-power.

The Company took another spurt in the year 1871, and signalised it by adding to their line two of the largest ships at that time afloat, with the single exception of the *Great Eastern*. These were the *Egypt*, of 4,670 tons, built by the Liverpool Shipbuilding Company, and the *Spain*, of 4,512 tons, built by Messrs. Laird, of Birkenhead. They were then, and are now, considered two of the finest specimens of shipbuilding afloat. The following are their dimensions:—The *Egypt*, 455 feet long and 44 feet beam, and the *Spain*, 440 feet long and 43 feet beam. Each of these vessels has frequently, although the National Company have never engaged in racing voyages, frequently made the passage from Queenstown to Sandy Hook in nine days. In 1872, the fleet of the National Company was again increased by the *Canada*, 4,276 tons, and the *Greece*, 4,310 tons. At the present time it consists of the following vessels:—

			Tons.		Horse-power.	Captains.
1871	<i>Spain</i>	...	4,512	...	600	R. W. Grace.
1871	<i>Egypt</i>	...	4,670	...	600	F. Grogan.
1868	<i>Italy</i>	...	4,169	...	500	A. Thomson.
1866	<i>France</i>	...	3,572	...	450	G. Alltree.
1872	<i>Canada</i>	...	4,276	...	450	J. Sumner.
1872	<i>Greece</i>	...	4,310	...	450	C. Thomas.
1864	<i>Queen</i>	...	4,457	...	450	J. T. Bragg.
1869	<i>Holland</i>	...	3,847	...	350	D. Simpson.
1865	<i>England</i>	...	4,900	...	600	W. H. Thompson.
1864	<i>Erin</i>	...	3,965	...	500	C. H. Andrews.
1864	<i>Helvetia</i>	...	3,982	...	500	J. K. Webster.
1865	<i>Denmark</i>	...	3,724	...	350	J. P. Williams.
			50,884			5,800

These magnificent vessels are capable of accommodating 1,200 cabin, and 15,000 steerage passengers, making a total of 16,200 passengers. With this fleet a weekly service is maintained, one vessel starting from

Liverpool every Wednesday, and another from New York every Saturday. In addition, there is a special weekly service maintained between London *via* Havre and New York, in which six vessels of the Company are usually engaged.

As an instance of the great use which such a powerful fleet of vessels might be to the country in time of war, the services of the National Company were utilised with advantage in the Abyssinian campaign. It is evident that vessels of this description are admirably adapted for service as transports, even if they are not specially fitted up at the moment, like the *Euphrates*, the *Jumna*, and similar vessels specially engaged in the transport service between this country and India. These vessels of the National Company can in a few days be made available for the transport of 1,000 troops with all their equipages and baggage. The two fine ships, the *Queen* and the *England*, were chartered by the British Government immediately upon the outbreak of the Abyssinian war, and continued in service until the close of the campaign. It was remarked at the time that these two vessels made the shortest runs of any of the transports between Liverpool and Bombay. The *Queen* steamed home from Bombay to Liverpool by way of the Cape in forty-nine days, which is claimed as the shortest time ever made by this route. The steamers of the National Company have been since engaged in important transport work for the Government.

It has been the settled practice of the Company from the beginning of its operations, to make the safety of its passengers its first consideration, and the speed of the passage the second. Considering the terrible accidents which have occurred, it will be admitted that this is both a sound and a wise policy, upon which the directors are to be commended. It is the uniform practice of the manager to require from each captain a sailing chart showing his course out and home, the instructions being that he is never to go higher than a certain line of latitude with the idea of getting a shorter sailing line. These charts are regularly examined and filed, and one consequence of the precaution is, that during several winters the National steamers have crossed and re-crossed the Atlantic without ever once seeing ice. The articles in the Company's Book of Instructions on these matters are as follows :—

“ During the ice months, that is to say, from 1st February until the 15th August inclusive, the commanders will shape their courses so far south as will, in their judgment, avoid danger from field ice and bergs. Between the above dates they are not expected to cross the region of the Banks higher than 48.30 N. lat. From 16th August until 31st January, inclusive, the Banks are to be crossed at a safe distance south of the Virgin Rocks.

“ The commanders, while using every diligence to secure a speedy

voyage, are prohibited from running any risk whatever that might result in accident to their ships. They must ever bear in mind that the safety of the ships and the lives and property on board is to be the ruling principle that shall govern them and the navigation of their ships, and no supposed gain in expedition or saving of time on the voyage is to be purchased at the risk of accident. The Company desires to establish and maintain the reputation of the steamers for safety, and expect such expedition on their voyage as is consistent with safe navigation."

These very necessary rules are strictly adhered to, and as this fact is well understood, the popularity of the line is easily accounted for. As an additional assurance, the Company advertises that it takes itself a risk of £100,000 on each of its vessels; and it should also be mentioned that a sum of £300 per annum is distributed between the captain and officers of each vessel, provided it is navigated free of accident. This makes in the aggregate a premium of £3,600. The proof of the efficacy of the regulations is to be found in the circumstance that although the Company since its foundation must have carried half-a-million of passengers, it has not lost a single life from accident on the seas.

Considering the comparatively short time the Company has been at work, it certainly presents a wonderful instance of what may be done by the limited liability principle when it is properly worked. The way it weathered the storm during the recent battle of the rates, proves the soundness of its position, and it would not be too much to prophecy from its past an equally prosperous future.

F I N E S.

IT is frequently a puzzle for shipmasters to define the exact position in which they are placed with regard to the levying of "fines" on their servants, in respect of offences committed against the Merchant Shipping Acts. This arises from two sources. First, because they misunderstand the 243rd Section of the 1854 Act, which gives power to the justices alone to levy a fine. Second, because the first fine levied under the 149th Section so clashes with other parts of the Act that it is difficult to distinguish its true import.

Embarrassment No. 1 may easily be cleared up, so far as understanding the true meaning of the Section is concerned; but to get shipmasters to carry it out implicitly is another matter. In the section quoted, it is distinctly laid down, when seamen-deserters are to be punished by fine,

that it must be "at the discretion of the Court." Curiously enough, there is one exception, and that is in sub-Section 3, in regard to the forfeiture of one month's pay for leaving a ship on arrival at the port of delivery, before being placed in security. As, however, not only in other sub-sections, but also in the whole of the Act (excepting the voluntary fines adopted under the provisions of the 149th Section), all the fines are fixed by the justices, there can be little doubt but that the fine under sub-Section 3 is to be mulcted in the same way. Men in command of ships, and especially steamers, have a difficult duty to do in this matter. If they have not adopted in their agreement the fines approved by the Board of Trade, and levied under the authority of the 149th Section, they must, to maintain discipline, fall back upon the disciplinary clauses of the Act, of which the principal are in the 243rd Section. Supposing, in the course of a voyage, a seaman has been absent without leave, and the master wishes to fine him the two days' pay, prescribed by the Section, but does not wish to be severe on him by sending him to prison, he generally deducts the amount from the wages at the end of the voyage. He may not have time to take the seaman before the Bench, and hence takes the law into his own hands. But, according to the law, this course is clearly illegal, although, we believe, it is frequently adopted. If the shipping-office officials see the deduction, the fine may be disallowed, but, even in that case, should the seaman be in a hurry to get home (say), and the shipmaster be obstinate, there is no power to compel him (outside of a Court) to waive the fines, unless, of course, the matter be left to the decision of the shipping master by mutual consent.

In regard to embarrassment No. 2, the difficulty appears to be created by the law itself. When the Act 13 and 14 Victoria, cap. 93 (14th August, 1850), was passed, the 46th Section prescribed, with regard to agreements, that the following may be incorporated: "Any regulations as to conduct on board, and as to fines, short allowance of provisions, or other lawful punishment for misconduct, which have been sanctioned by the Board of Trade as regulations proper to be adopted, and which the parties agree to adopt." This part of the law was adopted in its entirety by the Act of 1854, and still remains. The Board of Trade, with a laudable desire to carry out the wishes of the Legislature, issued a set of regulations, numbered 1 to 22, imposing fines for certain offences, in order that these fines might not be imposed unnecessarily, and in an arbitrary manner, and the 258th Section makes it imperative that the whole of such fines should be paid into the Mercantile Marine Fund. But, at the very beginning of the list, a difficulty is experienced in order to reconcile its action with that of the 243rd and 181st Sections. By the latter, a seaman's wages are to begin when he commences work, or at the time appointed for that work to begin by the agreement, whichever first

happens. By No. 1 of the fines, under the 149th Section, it is arranged that, if a seaman is not on board at the time fixed by the agreement, he is to be fined the amount of two days' pay. Now, if a seaman comes on board the ship on the day after he has agreed to be on board, and is fined two days' pay, the rather singular result follows that, not only *he* is punished, but the owner or master of the ship is punished equally with him. To make this plain : By 181st Section his wages must commence from the day named in the agreement, which is a day he did not work. He only begins to be valuable on the next day. As *two* days are levied, and paid over to the Government, it follows that the defaulter suffers to the extent of one day's pay, or, the day on which he joined, and the master to the extent of one day, or the day on which the seaman did *not* join, but on which he should have been on board to work, to reimburse the employer for the day's wages which he (the employer) is compelled to pay him.

Moreover, why No. 1 offence under the 149th Section, and also No. 2, imposing a fine of one day's pay for " not returning on board at the expiration of leave " should remain, seems to us quite inexplicable, for those offences are both met by the operation of the 243rd Section, paragraph (2). The multiplication of regulations referring to the same offence can only cause confusion and complication. It would be much better to drop one or the other. The Bill of 1875, which disappeared so suddenly from the boards of St. Stephen's, contained some clearer regulations as to these particular offences, but prescribed nothing with regard to the voluntary or agreement fines, nor did it define the relation to 181st Section more clearly than the old Act. It may also be pointed out, *en passant*, that that section is in direct antagonism to the 186th Section of 1854 Act, as to the wages' period, and shows that the whole subject needs reconsideration and reconstruction.

WHAT IS A SAILOR ?

MASTERS of vessels, especially steamers, are frequently puzzled to construe the term " sailors," which appears in the usual printed form of agreement. Does it mean to include " O.S." as well as " A.B.," and does it also contain within the limits of its comprehension, firemen, trimmers, cooks, and stewards, as well as other members of the miscellaneous crowd which go to form the crew of a modern " leviathan " of the deep ? In the preliminary clause (2nd Section)

of the Merchant Shipping Act of 1854, the term "seamen" is explained to mean "any persons serving, or bound to serve, on board a British ship, except the master, pilot, and apprentices." But in the 149th Section of the same Act, the term "sailors" is imported, and it is made imperative on masters of ships, under that clause, in framing their agreements, to specify the number of "sailors" forming the crew. This is all very nice, and goes to protect both master and man in case there is a dispute afterwards, as to the number of such persons required to navigate the craft. But then arises the question: What is a sailor? Is he a seaman, or is a seaman a sailor? There is no interpretation clause, unfortunately, and every master must therefore be a "law unto himself" in this matter. Doubtless, the paucity of steamers existing at the time the first modern Mercantile Marine Act (1850) was passed, was the cause of this important point being overlooked. It seems a common-sense view of the matter to say that the word "seaman" is a legal term for the purpose of administering the penal sections of the Act; and that the phrase "sailor" has a technical meaning, showing the persons who should navigate the ship. But, unhappily, common sense is a rare gift, not always possessed by the "great unpaid"; and hence misconstruction is apt to arise, in the absence of a clear explanation. In steamboats this difficulty often arises. "Sailor" is a technical term—so is engineer. If the word "seaman" should include an engineer for legal purposes, why should not "sailor" include him for technical purposes? *Ceteris paribus* it ought. At the same time it is obvious to common sense that engineer or fireman are not synonymous terms with sailor. The sailor is the tenant of the sailing ship more especially, and the fireman that of the steamer. The former "steers," "reefs," and "hands" the ship and her equipments; the latter merely shovels coals into a hole. At the same time it must be borne in mind that in a court of law, with a sharp attorney handling a "case," common sense is frequently non-suited, and hence the necessity for the legal phraseology of the statutes being of the clearest and most unambiguous character. It seems reasonable now, when a new Shipping Act is in embryo, to have this matter put on a safe basis. The term "sailor" should be defined; and in the case of steamers it should be provided that the agreement with the crew contains a place for the number of engineers and firemen to be inserted, as they are as indispensable to the safe navigation of the steamer as the "sailor" is to that of the sailing ship.

THE NORWEGIAN FISHERIES FOR 1874.

THE coasts of Norway have long been famous for their fisheries, which have always proved a source of wealth to the Norwegians, who derive from this pursuit one of the main branches of their commerce. The number of persons and vessels engaged show that it is a profitable and important maritime occupation. To Vice-Consul Crowe we are indebted for a lengthened account, both comparative and otherwise, of the fisheries for the year 1874, with an interesting description of the novel uses to which certain portions of the food thus obtained have been applied. The spring herring fishery, with the exception of that in 1871, when there was an extraordinary rich catch, especially in the Søndmøre district, has in the course of the last five years steadily decreased, so much so, that the produce of 1874 did not reach to one-thirtieth of the average quantity for the years 1851 to 1869, from which it is to be presumed that the present herring period, which began in 1808, is at an end, or at all events very nearly so. The real cause of this decline has yet to be discovered; probably it will be found to be connected with some submarine agency, such as the abundance or scarcity of food, or the storms or currents affecting the temperature of the ocean.

This is, however, not the first time that the spring herring fishery has been known to desert the coast even for long periods. The details respecting this fishery in early times are naturally most uncertain and insufficient, but within the three last centuries the records have been more accurate, and from these we find that this fishery totally disappeared during the first half of the seventeenth century, and that, in the years 1650 to 1654, only 8,000 barrels were annually exported. In 1661 and 1662 the fishery seems to have been good, but not extraordinary; and so it continued for the latter half of the century. From 1700 to 1784 the spring herrings visited the coast regularly, especially between Stavanger and Bergen, and during the last ten years of the period they were unusually plentiful near Stavanger. From 1786-1756, the fishery continued good in the Romsdal districts, but in Søndmøre it ceased altogether in the year 1758, but was replaced by a most profitable cod fishery. From 1785 the spring herring is said to have entirely deserted the coast, not making its appearance again till 1808.

The fishermen resorting to this part of the coast have, in consequence of the failure of the spring herrings, pursued the cod fishery with great eagerness during the last two years, and it has proved most profitable to them, although they have laboured under great disadvantages, such as inexperience in using the different, and to them novel, kind of fishing

gear necessary, and the weather on the whole during the year being unfavourable to them. The numbers caught in 1873 were 5,483,900, and in 1874, 4,400,280; and although the results do not equal those of the former years, still they bear a fair comparison with what the herring fisheries used to bring in in these districts. The cod here are caught as easily with lines as net, in fact it is difficult to state which gear the fishermen found most successful. Next year it is anticipated that the cod fishery in these districts will be prosecuted still more zealously, although it is expected that the fishermen as usual will be provided with their herring gear in case of its being needed.

According to the official returns from the Nordland district, the result of the large herring fishery was 147,000 barrels, which, together with the catch in the Tromsøe district, may represent an aggregate of 300,000 full-packed barrels. The prices fluctuated from 6s. to 11s. 6d. per large hundred (120), the average price, however, may be calculated at 9s.; generally speaking, the price of large herrings has of late years been on the increase, not, however, in any considerable degree. The reason of this increase in price cannot be attributed solely to the unfavourable result of the spring herring fishery, but to the increased number of purchasers, especially from Russia, and the increased demand from other foreign markets. It is as impossible to offer an opinion as to the causes of the desertion of the north-west coast by the large herrings as it is in the case of the departure of the spring herring from the south-west coast; suffice it to say, that it is not surprising that a strong feeling of disappointment has been very generally felt by the local fishermen, as well as by the most affluent dealers and shipping merchants in the country.

The mackerel fishery is only carried on along the south coast of Norway during the summer months, Christiansund and Farsund being the principal shipping ports. This fishery is wholly monopolized by English speculators, and is considered by them as a most lucrative business. Upon an average of the last five years the annual profit was £23,000. The total value of the export in 1874 was £15,648, which amount includes the expenses of providing packing cases, ice, &c., for ready shipment. In 1873, the exportation of mackerel was £25,596. It will thus be seen, the value of the exports for the year 1874 was considerably under that of 1873. This is partly owing to the fact that the expense of packing the fish had been much heavier in consequence of higher wages, and the ice required for the purpose having to be imported from other parts of the country, the winter having been so mild. The fishery was carried on by 349 smacks and 128 boats, employing 1,700 hands. Six men and two boats were lost. Next in value to the mackerel fishery in these southern districts of the country are the salmon and lobster. The former reached a value of about £11,000, and the latter £8,122. All

along the southern coast the salmon fishery had been most successful, whether the result of accident or the preservation laws it is difficult to say. The number of lobsters exported was 365,518, being double those of the two preceding years.

The Loffoden and Finmark cod fisheries are at present the most important in the country. The former commences generally about the end of January, continuing to the end of March ; and the latter, next in importance, commences the end of April, and continues during three, and sometimes four, of the summer months. The catch of the year at Loffoden is estimated at 16,000,000 fish, which was less than former years. The weather, on the whole, was unfavourable during the greater part of the season, which in a great measure accounts for the poor results of the fishery. The number of boats engaged was 4,439 : their crews, 8,966 ; and fishermen, 18,821 ; besides numerous dryers and salters employed on shore, whose number may be estimated at 5,000 or 6,000 engaged in preparing the cod for exportation and home consumption. The Finmarken fishery commenced during the first days of April, under very favourable auspices, as quantities of codde (*Mallotus articus*) and cod appeared under the land, and in the Sylte fiord such numbers of cod were caught that prices fell 9s. per 100 fish, and even at that price some difficulty was found in finding purchasers. At the latter end of April, on the contrary, the fishery became very irregular ; and during the middle of May it was much obstructed by tempestuous weather, especially in the Varanger district. The fishery was above the average, the catch having been 16,000,000 cod, besides the local consumption. Of the total quantity caught, 8,000,000 fish were prepared as klipfish, most of the remainder as stockfish. As an evidence of the value and importance of this fishery, it may be stated that the number of men participating in it is quite as great as that engaged of late years at the Loffoden fishery. In 1874, 3,600 boats were employed, and at the same time there were also 229 trading vessels at the several stations purchasing the produce, besides 154 purchasers or speculators on land. These numbers increased towards the end of the fishery. Besides cod, quantities of pollack, codfish, and halibut are caught during the Finmark fishery, but they are principally sold to the Russian traders, who salt them in bulk in their vessels, and proceed with them principally to Archangel.

The processes gone through in the conversion of the refuse of the codfish into artificial guano, have rendered this a lucrative article of export, exceeding in value the export of ice-packed fish to England, and with such good prospects of future development, that, ere long, it is not improbable that the annual export from Norway will exceed a value of 1,000,000 Sp. dol. The raw material annually consumed in the factories established in the Loffoden district amounts to about 15,000 fish-heads and backbones.

The supply of the former has sometimes been scanty ; the reason assigned is that, among the common people, the fish-heads have hitherto been used as a substitute for winter fodder for the cattle. It is estimated that the cattle in the fishing districts consume about 10,000,000 of cod's-heads annually. On visiting one of these guano factories, the first thing which attracts the attention is the accumulation of the raw material, consisting principally of dried heads and backbones, in millions. In the factory itself one observes, in the first compartment, some large iron-plates and stone-slabs, with furnaces underneath ; on these plates the raw material goes through the drying process preparatory to ulterior operations. Although previously dried in the air, they have to be submitted to this additional drying process before being ground. A series of wooden shovels, fixed over the pans, and set in motion by mechanical means, keep constantly stirring the material to prevent its burning. When thoroughly dried, the raw material is brought to the mill, and placed between the discs, furnished with sharp steel knives rotatory over each other, so as tear the heads and backs into shreds. The raw material, after having gone through this process, is then taken through a common, coarse mill, and is then weighed into sacks holding 1 cwt., and stored, ready for sale. Another novel and remarkable article, prepared from the products of the ocean—namely, fish-flour, has been brought forward in the last few years. It is not as yet manufactured in any great quantity, as the article is still new in the market, and, consequently, there is no great demand for it. The flour is prepared from dried fish of the first quality ; it is thoroughly desiccated, and then ground in a mill. There are two qualities, the coarse and fine ground. It is especially the former which has found favour with the public, from which an excellent dish of preserved fish can in a short time be prepared ; while the finer flour is used for fish puddings—a dish highly appreciated in Norway. To those who have no regular supply of fresh fish, it is presumed this article will be more particularly important.

BOOKS RECEIVED.

Approximate Freeboard. By F. W. Wymer. London : Imray and Co., Minories. 1875.

WE had occasion in our October number to refer to Mr. Wymer's formulae in the course of a general criticism of freeboard literature ; we now purpose considering them more fully. At first they were issued on a modest card, but " the interest taken by the general public in them " has led to

the production of the more pretentious volume before us, in which is given the genesis of Mr. Wymer's rules, and a comparison of their results with those of rival systems. There are bound up with the book, reprints of those parts of the Merchant Shipping Acts having reference to tonnage, and the Unseaworthy Ships' Act of 1875. We are also supplied with about a quire of cream-laid note-paper, ruled, indexed, and cross-ruled in columns, with printed headings, so that the happy owner of a copy of "Approximate Freeboard" may, for himself, keep "a registry of the freeboard of different vessels." The first edition of the tables was headed, "Every vessel to be judged by its own merits." This motto has been omitted in the book before us. The idea might have been more happily expressed, and we were certainly familiar with it before Mr. Wymer turned his attention to the question at all, but we doubt whether all that has been added in this second edition compensates for the omission of that rough-cut gem of good truth. It was in the year 1874 that the question of freeboard came before Mr. Wymer for serious consideration, and he informs us that in endeavouring "to solve the value of freeboard, in respect to the elements of danger in vessels" (a somewhat peculiar way of approaching the question), he found that two inches to the foot was the coaster's rule, three inches a good rule for vessels of certain proportions, and two inches and a half for ships of an intermediate character. In the first-class, he noticed that the length was usually four times the beam; in the second, nine times; and in the intermediate class, six and a quarter times. This was for vessels in which the depth and breadth were to each other in the average ratio, and the co-efficient of fineness .7. From this primal idea is evolved a succession of formulæ and tables, dealing with all possible ships up to a length of 600, and a tonnage of 7,600—steamers and sailing ships, iron, composite, and wood. The first formula given is—

$$f^2 = \frac{L}{B}$$

f being inches to the foot depth of hold.

From this is derived

$$f^2 = L \times \frac{T \times 100}{L \times B \times D} \times 1.44 \quad \text{which reduces to}$$

$$f^2 = \frac{T \times 144}{B^2 \times D}$$

This, as will at once be seen, involves two assumptions: that f should, for the same length and breadth, vary as the square root of the co-efficient of fineness; second, that the method given by Mr. Wymer and others for finding that co-efficient is approximately correct. We should have been glad if he had told us what is meant by f^2 varying as the co-efficient of

fineness. We hear very much about freeboard being so regulated by fineness as to give for ships of certain classes a definite percentage of spare buoyancy, but none of the writers upon the question will inform us what percentage they think the proper one in each case. Mr. Martell has his tables so arranged as to tell us that as the depth of hold ranges from 7 to 14 feet, the percentage of spare buoyancy should range from 20 to 25; that from 14 to 22 feet the percentage should be from 25 to 27½, and so on. Mr. Wymer leaves us in the dark altogether. The use of a co-efficient of fineness, if it means anything definite, is surely intended as a ready way of arriving at some preconceived percentage of spare buoyancy; why not give the percentage in each case? If the information asked for by us were given, then the accuracy of the methods might be tested; without it, for all we know to the contrary, they may be a meaningless juggle. We have several times adverted to the large errors caused by a use of the registered dimensions and registered tonnage to find the co-efficient of fineness, and will not, in the present connection, trouble our readers with a repetition of our reasons for believing that all rules of freeboard depending upon co-efficients thus obtained, are so inaccurate as to be practically worthless. The one before us is, of course, among the number.

One charge, however, has been made against Mr. Wymer upon which we must say a few words for the defence. The co-efficient of fineness, it has been said, is Mr. Martell's invention, and Mr. Wymer, in making use of it, has been guilty of plagiarism. We are in a position to give the history of co-efficients of fineness, and when we do so, our readers will see that the only merit, if merit indeed there be, that Mr. Martell can claim, is their application to freeboard. Of course most designers of ships have habitually worked out the co-efficient of their displacement in order to form an idea of the relative fineness below the water of their various designs. Some years ago, however, the authorities of Lloyd's being anxious to have a method of readily estimating the tonnage of vessels from their principal dimensions, applied to the Tonnage Office for assistance in the matter. They were then furnished with co-efficients which, multiplied into the product of the length, breadth, and depth of a ship, would for each kind of vessel give the approximate tonnage. Mr. Wymer can hardly be found fault with because he understands so much of his official duties as a tonnage measurer as to be aware of the connection between the fineness of a ship, and the ratio between her tonnage and the product of the principal dimensions.

We find fault with the rules in this volume, not merely because they are empirical, for all such rules must be, but because they have the smallest possible basis of experience. The writer does not profess to have collected facts whereon to base them, they are merely the result of his own observa-

tion, and we believe that no one can from his own individual practical experience frame rules for freeboard. We cannot imagine that Mr. Wymer, who, as he himself says, only turned his attention to the subject in the early part of 1874, is the best qualified person to lay down rules of freeboard from his own observation. As far as we know, he alone, of all the writers on the subject, has attempted to do so; and if his experience had been of a much more extensive and varied character, it could not have justified him in propounding a series of rules professing to deal with all possible, and many impossible, types of vessels. It may be said that they come very near in results to the rules given by Mr. Martell, and also to the rival plan of Mr. Rundell. In the book before us, there is a table showing freeboards for ships of different dimensions computed by the three systems. In many cases all three rules give nearly the same results; in some, however, they are very different. Mr. Wymer gives the same tonnage for sailing ships as for steamers, and we notice in the table that taking, for instance the case of a large sailing ship, of nearly 1,900 tons, and of dimensions of the usual proportions, Mr. Rundell gives 6' 11", Mr. Martell 6' 5", and Mr. Wymer only 5' 3 $\frac{3}{4}$ ". The first is equal to 8.4 inches to the foot depth of hold; the second, 8.2; the third, 2.6. Who, that knows anything of the question, would think of giving to a sailing ship of 1,900 tons any less freeboard than three inches to the foot? Mr. Wymer gives her but 2.6.

For ships of moderate size, his rules give results generally intermediate between the freeboards for steamers and for sailing vessels, as given by both Mr. Martell and Mr. Rundell. The two latter give the same freeboard for small sailing vessels as for small steamers, increase it for sailing vessels of moderate size, and, for very large sailing vessels, Mr. Martell gives nearly the same as for very large steamers; Mr. Rundell giving more. We incline to the opinion that on this part of the question Mr. Martell has taken the right course. There is a pretty general agreement that long vessels require great freeboard in consequence of their increased liability to be submerged by waves of about their own length. In sailing ships, however, stability enters largely into the question; the vessel is masted in reference to her size, and, consequently, to secure her safety under sail, she should have more freeboard than would in most cases be necessary for a steamer of the same dimensions. However, in vessels of extreme length, it is probable that the increase of freeboard, due to length, would give as much as would be required from considerations of stability. But there is to a great extent a general agreement among most writers on the question, that a sailing vessel, of medium size, requires more freeboard than a steamer of the same depth of hold. Mr. Wymer, however, in this matter, has a view of his own, and gives no reason for his dissent from the general opinion.

We cannot say much for the way in which the details are worked out in the book before us. For instance, two tables are given of square roots, in order to facilitate the working out of results from the rules, and our readers will hardly believe that they have been framed by the simple process of squaring consecutive numbers. Thus, if we require the square root of 11 in., the nearest number we can find is 10·89, of which the root is 3·3. It appears that our author has thought that a table of squares has only to be inverted to make a convenient table of roots.

We hope that with Mr. Wymer's book we have seen the last attempt to settle freeboard by means of so-called co-efficients of fineness, which really mean nothing as to the actual fineness of the ship. If freeboard is to be determined by spare buoyancy, let it be by the real genuine article; calculate the displacement of the ship, and then cut off the percentage of volume required. In this matter, accuracy is of the utmost importance to the shipowner; three inches immersion in a vessel of the largest size may appear to be very little, but as regards the profits of the owner it means very much. The expenses are the same whatever the water line, and an extra eighty tons of cargo means that the entire freightage for the eighty tons is added to the earnings of the ship. As for the marking of load lines under the recent Act, of course we do not recommend our readers to consult Mr. Wymer; we advise them to consult no table whatever if they can do without it. Mark the ship to the line at which she has habitually sailed with good results. If any rule be used let it be a simple one depending merely upon linear dimensions, the result being modified by a knowledge of the capabilities of the ship. All the complex tables of freeboard we have yet seen, have simply their complexity to recommend them; the result is frequently expressed in quarters of an inch, and is yet inches out of the way.

Tin Mining in New South Wales.

WE have before us an interesting report on the geology of the tin-bearing district of New England in New South Wales, printed by order of the Legislative Assembly of that colony. It is said that the annual yield from the Australian tin mines is now about equal to half of that from all the old tin-mining countries combined. It will thus be seen that the mines, which, it is said, are likely to become very much more productive than at present, will be an important element in the wealth of this prosperous colony. Some of the most valuable of the tin-workings are in the recent and tertiary alluvial deposit. It is said that in one of these 80 tons of ore were obtained by fifteen men in three months, the ore being of such quality as to be worth from £50 to £60 per ton. Some interesting lithographic drawings at the end of the report are

given by way of illustrating the natural process by which the alluvial tin-bearing deposits have been formed by the denudation of the granite and greenstone rocks. Masses of granite of most fantastic shapes remain, showing where a soft rock has been, in the course of ages, washed away and the harder stone left. In some cases the pieces of rock seem as much detached from the adjacent ground as if they had been dropped there, instead of having been simply left behind when other parts of the rock were washed away. One picture shows three lumps of rock piled one on the other to a total height of twenty feet; a branch of a tree has grown against the upper one, and now serves to keep it from falling. The richness of the alluvial beds indicates that the source from which the "stream-tin" came can itself be worked with good results. This, it is said, has been done with considerable success. Mr. Wilkinson, the surveyor, who prepared the official report, concludes thus:—"And, seeing that the district I have endeavoured to describe (that within a radius of 25 miles from Inverell) forms but a small portion of the stanniferous country of New South Wales and Queensland, we may readily conceive the future magnitude which the tin-mining industry in these colonies is destined to attain."

A WORD TO SHIPMASTERS.

THE cry that our race of English mariners is rapidly and seriously deteriorating is one to which the ears of the public must have grown tolerably accustomed during the last few years. We are constantly being told that the enormous development of our merchant shipping has not been an unmixed blessing, and that although an improvement may have taken place in our ships, there has been a corresponding decline in the quality of the men who man them. The hardy tars immortalized by Dibdin are said to have been succeeded by a class inferior in ability and seamanship, and remarkable for their vices rather than their good qualities. For our own part, we think that the evil has been exaggerated, yet, if we may judge from the number and unanimity of the complaints that are being raised, it can be by no means an entirely imaginary one. We doubt whether seamen have actually deteriorated. We rather think the fault is that they have not kept pace in improvement with men of other trades, and that now, as of old, the majority of "ne'er do weels" go to sea. Shipowners and shipmasters all seem to think that the quality of the crews who work

their vessels is at a lower ebb at the present day than it has ever before reached, and that every day the difficulty of obtaining thoroughly efficient seamen is becoming greater; but we must not forget that this has always been the cry. There always was a golden age, when men were brave and women virtuous; but whatever previous sailors may have been, there is no doubt that, as times go, many of our present seamen are very bad, and that they cause more loss of ships and life than all the "murderous shipowners in the world."

Bearing in mind the above consideration, we will now proceed to point out one of the causes which would of itself, at any rate, bring good seamen down to a level with the bad, and therefore elevate the bad to an undue position. It would, perhaps, be difficult to trace the whole extent of the alleged deterioration to any particular cause. The chances are that it has arisen from a variety of causes combined. The great development of the steam trade has, no doubt, largely assisted in lowering the standard of professional capacity and ability of our seamen. A steamship may be worked with a crew (excepting, of course, the engineers) that would be utterly worthless on board a sailing vessel, where practical knowledge and seamanship are required. But apart from this, and apart from any other cause that may have been undermining the good qualities of our sailors, there is an evil at work to which the attention of shipmasters should be especially directed, since it is one that lies solely within their own power to remedy. We refer to the almost universal practice of indiscriminately giving "V. G." discharge certificates to good and bad men alike. Rightly used, the certificates that are given to seamen on their being discharged from their vessels would become not only a means of protection to shipmasters themselves against imposition, but also the means of raising the characters of the men, by inducing them to make an effort during the voyage to gain a satisfactory discharge. Instead of this, these certificates have become comparatively useless. Their possession is by no means a guarantee as to a man's real worth, as, from the reckless manner in which they are distributed in the present day, the most incompetent lubber that ever stood on a ship's deck is almost as certain to obtain a first-class discharge as though he were a model of perfection. Hence it is that men become careless and indifferent, and discipline becomes relaxed. The most worthless characters come to look upon the "V. G." as their right, and feel themselves insulted if they are reported simply as "good." And this unsatisfactory state of things has arisen solely from the lack of a little moral courage, or from the exercise of a too-generous good-nature on the part of the masters of vessels. The latter feeling has, no doubt, a very deep influence in the matter. At the end of a long voyage there is a natural inclination to let by-gones be

by-gones, and the result is the presentation of first-rate certificates to good and bad alike. This exercise of generosity is doubtless accompanied by the reflection that the donor is not likely to be troubled by his bad characters again. He has sailed with them once—he knows and will remember them—let them go where they will. And so they go, and by the aid of the “V. G.” certificates he has given them the old tale of imposition is commenced again.

It must be acknowledged that the question of withholding the “V. G.” certificate is not always one of merely restraining a good-natured impulse. It not unfrequently happens that some amount of moral—and indeed physical—courage is necessary on the part of a master who determines to describe each man according to his worth. Some of the worst and most daring specimens of seamen are not only abusive, but actually threatening if offered anything less than first-class certificates of discharge. They have become so accustomed to receive the “V. G.” that when they have to deal with a man who is sufficiently conscientious and courageous to describe them as they deserve they grow indignant at the supposed injustice, and hold out threats of violence towards their detractor. But if every master would resolve to do his duty, threats of this kind would soon become rare, and what is more, characters of this description would become equally scarce in the service. There can be little doubt that if shipmasters made it an invariable point of honour to describe each man of their crews exactly as he had been found during the voyage, the quality of our merchant seamen generally would soon show a marked improvement. But even if this were not the result, the possession of a “V. G.” certificate would at least be a protection against worthless incompetency, instead of a delusion and a mockery as it is under the present system. Shipmasters are loud in their complaints against the race of seamen they now have to work their vessels with, but we cannot impress upon them too strongly that the remedy lies in a great measure in their own hands. If they would only make a practice of issuing really honest certificates they would be laying the foundation of a reform, the necessity for which is known to none better than to themselves. They should remember that in giving a good certificate to a bad seaman they are committing a double injustice. They are injuring the deserving man by greatly lowering the value of the “V. G.” certificate he has justly earned, and they are deceiving—so far as the certificate possesses any real significance—the next employers of their worthless hands.

Unfortunately, there seems to be but very little *esprit de corps* among shipmasters on this point. Too often the little exercise of generosity that accompanies the bestowal of a false character is accompanied by the selfish reflection that if anyone suffers in consequence it will not be the

giver. And we have even heard of cases where masters have deliberately given false characters with a view to deceiving others, simply because they themselves had been deceived. No doubt such instances of stupid revenge as this are rare, but we have every reason to believe that the practice of conferring "V. G." characters upon worthless seamen is fast becoming a general rule. This is much to be regretted by all who feel an interest in the welfare of our merchant service. Put to their legitimate use, these discharge certificates would be a simple, yet sure, means of rewarding the deserving seaman by enabling him to select the best class of engagement, of punishing incompetency, and of protecting shipmasters against worthless hands; yet the attainment of all these ends is being frustrated by the short-sighted practice referred to. We are inclined to think the evil has arisen chiefly from want of reflection on the part of shipmasters. As a class, they are not men who are likely to be deterred from doing their duty by the fear of a few unpleasant words at the discharge table, and we appeal to them to remember that every time they have occasion to describe a man's character they are performing an act which is bound to have an influence, one way or the other, upon the entire class of merchant seamen. A false certificate is a direct encouragement to incompetency, and a corresponding discouragement to real merit, while a truthful description of character has the very opposite effects. These facts are so patent that it seems a work of supererogation to point them out, yet, in spite of all their clearness, they seem to be running great risk of being ignored in the present day. We ask those whose business and duty it is to remember them, to bear them well in mind, and to bear in mind also that for every false certificate they give they render themselves liable to a penalty, at the same time not forgetting that the Board of Trade are now Public Prosecutors, with a Law Department of their own.

CORRESPONDENCE.

SHIPS' FOG-SIGNALS.

To the Editor of the "Nautical Magazine."

SIR,—In your notice of the American fog instrument, in the October number of the *Nautical Magazine*, you say, "We think these horns will be a real blessing to seamen, as a ship in a fog can now, at last, by means of them, indicate to approaching vessels the tack she is on. These

horns, by means of long and short sounds, furnish the means of one ship talking to another, in the thickest fog."

In the year 1868, I introduced the Bellows Fog-Horn, after making a number of experiments to ascertain the best way of applying power to sound a horn by hand. This instrument was at once adopted by the Admiralty, and has since been used in the Navy during fogs, both as a caution to approaching ships, and also for the purpose of making all signals which in clear weather are made by flags, and at night by the flashing light.

The Bellows Fog-Horn has been found to be efficient (which no mouth-horn can be), simple, durable, cheap, and admirably adapted for signalling.

Signalling with horns, whistles, &c., has been in use in the Navy since the year 1858, being first worked as Mr. Redl's Cone System. At the same time (1868), I proposed to the Admiralty, and Board of Trade, that ships on the starboard tack should sound "one blast at a time," and those on the port tack "two blasts at a time" (starboard being generally associated with odd numbers and port with even in the Navy), and, if thought desirable, "three blasts at a time" when running before the wind. This idea has since been adopted by the American Government, which had some of my fog instruments and circulars.

I shall feel obliged by your inserting this letter in your next number.

I am, Sir, your obedient servant,

GILBERT T. KEY,

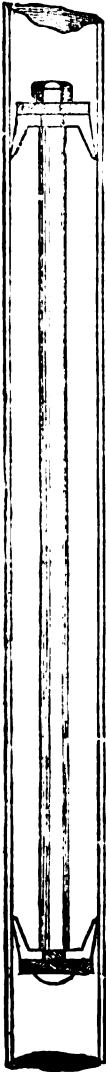
Commander, R.N.

Weymouth, October 22, 1875.

[We have long been aware of the efficiency of the Bellows Fog-Horn, as used in the Royal Navy, but we must say, and many naval officers agree with us, that the Anderson Horn appears to be a decided improvement in regard to sound-producing power, and is as easily worked by hand. If Captain Key can still further develop his Bellows-Horn, so as to make it more effective than the "Anderson," we shall be quite ready to acknowledge it in these pages, our object being simply to encourage the development of the best possible instrument. Now that there seems a probability of signalling by sound being more extensively adopted in our Royal and Mercantile Navies, it is only fair that the credit of its introduction should be given to those who originated it, and, therefore, we have much pleasure in publishing Captain Key's letter.—Ed.]

MARINE INVENTIONS.

BREWER'S SELF-ADJUSTING TUBE-STOPPER.—This simple arrangement for stopping up boiler tubes when fractured has been registered by Mr. J. S. Brewer, one of the Board of Trade surveyors at Cardiff. It was subjected to a test at the Tubal Cain Engine Works, Cardiff, in November last. The arrangement of the stopper is simple, and is as follows:—It consists of an iron rod of about an inch diameter, the ends of which are reduced to seven-eighths, and form a shoulder against which washers are placed. The principal feature comes next—namely, the vulcanized india-rubber cups which are placed at each end with their mouths or open ends facing each other. They are composed of material expressly made to stand great heat and high-pressure steam; the form somewhat resembles an ordinary breakfast cup, the base being five-eighths thick and the walls or sides tapering from the same thickness to a feather edge. The diameter at the open end corresponds to or is slightly larger than the tube, whilst the base or smaller end is about a quarter of an inch less, to allow the plug or stopper to pass a rough fracture. The cups are strengthened and kept in position by cast-iron washers, which are secured on the ends of the rod by nuts. The manner of inserting the stopper is exceedingly simple. The first cup, from its shape, will easily enter; the second one, which has its mouth or open end looking towards the tube, is compressed by an iron ring, which slips off as the cup enters the tube. The stopper is then pushed forward until the first cup has passed the leak, when the water and steam fill the space between them and force both cups backward and outward, shutting off the escape, and further leakage is prevented. The test was made in the following manner:—A $9\frac{1}{2}$ -inch boiler tube was connected with a large boiler by a $\frac{3}{4}$ -inch pipe below the water line; a pressure gauge was also fixed on the tube; the cock was then opened, and a full stream of water and steam issued from the tube. The stopper was then entered by hand and pushed easily forward with a bar. Immediately after the entrance of the second cup the effect was instantaneous, the water and steam ceased to escape, the pressure gauge on the tube rising to the same pressure as that on the boiler, viz.—35lbs. The experiment was repeated several times with equal success.



This valuable invention will commend itself from the above description even to the "knowing ones." The bursting of tubes, in marine boilers especially, is of every-day occurrence, and the primitive mode of remedy by wooden plugs is frequently attended with considerable danger. We have no hesitation, therefore, in saying that the self-adjusting tube-stopper deserves a ready and extensive patronage. Its advantages by our steamship readers may be summarized thus:—It is self-adjusting; it cannot get out of order; it can be fixed in a moment; it is of the simplest construction! The sole manufacturers are Messrs. Parfitt and Jenkins, Tubal Cain Engine Works, Cardiff, to whom the inventor has entrusted the sale. We think it is a pity, for the sake of the spread of the invention and the patentee himself, that he has not given some manufacturers at the other principal ports a commission to work his patent as well.

PATENT STEEL-WIRE ROPES IN LIEU OF CHAIN CABLES AND TOWING HAWSERS.—In our January number we called attention to the steel-wire ropes and appliances patented by Mr. W. M. Bullivant, of 59, Fenchurch Street, London, which, after having inspected and seen tested at Mr. David Kirkaldy's Public Testing and Experimental Works, we considered well worthy the attention of the Admiralty and Committees of Register Books, as well as all shipowners. Since that time we have watched their adaptation with more than ordinary interest as with the increasing size of our ships both in the Navy and merchant service we doubtless require increased strength in the cables and hawsers, on which the safety of these monster vessels entirely depends. The $2\frac{1}{4}$ -in. chain cable which takes a proof strain of 91 tons, and is supposed to take the breaking strain of 120 tons, was considered a suitable size for riding vessels of 3,000 and 4,000 tons, but now we have very many ships far over that size and reaching as much as 11,000 tons, it is found impracticable to use larger cables, simply because men cannot handle them, therefore the safety of our largest ships has to depend upon the same size chains as are used for vessels of half their tonnage. The same remarks apply to the large hemp hawsers, that above a certain size they are practically unworkable. These patent steel-wire ropes have now, after twelve months severe trial, shown that they possess the qualities required—strength and pliability, with lightness of weight, being for similar strength, at only one-eighth the weight of chain and one-third that of hemp rope. The Admiralty have been the first to give them a trial for ships' cables, having had them fitted to H.M.S. *Valorous*, and it is said they are giving every satisfaction. The size steel-wire rope used for her cable is 5-in., the 150 fathoms weighing 84cwt. in the place of $1\frac{1}{2}$ -in. chain-cables, 150 fathoms weighing 12 tons. This steel-wire cable, when the

Valorous was moored at Spithead, had nine turns taken round the stock of the anchor, and when tested after this very severe usage stranded only at 69 tons, the breaking strain of the 1½-in. chain when new being 62 tons. Another great advantage is that the steel-wire-rope cable is perfectly uniform in strength, when the strength of the chain is but that of its weakest link. The steel-wire hawsers are coming into extensive use both in the Navy and merchant service, and we are glad to notice the Lloyd's Committee of Shipping, and also Bureau Veritas, admit them on board ships classed in their books in lieu of stream chains and hemp hawsers. We have the October pamphlet of the makers before us containing testimonials of many who have used and the various ways in which they have used them, and we note that, although they have been in use for twelve months and subjected to the most severe trials, no hawser had then been broken or even injured. One of the most severe trials we find was that of towing H.M.S. *Caledonia*, armour-plated vessel of 6,882 tons, from Liverpool to Plymouth. H.M.S. *Valorous* took her in tow, using a 4-in. steel-wire hawser on the port side and a 18½-in. hemp hawser on the starboard side. The second day the hemp hawser parted, when a 1½-in. stream chain was made fast in its place, which also broke, when the steel-wire hawser did the work without any injury to itself, and is still in use. The weight of the 4-in. steel-wire rope was 12 cwt., the 18½-in. hemp hawser 45 cwt., and the 1½-in. stream chain 180 cwt. to the 120 fathoms. We also notice that its pliability is so great that it is used in ordinary blocks for lifting heavy weights. We have, after these successful trials, but little doubt that these steel-wire hawsers will come very generally into use both in the Navy and the merchant service. It occurs to us how useful it would be to keep a steel-wire hawser equal to a breaking strain of about 50 tons coiled on a reel in our large steamers ready for use at a moment's notice either for towing or being towed, and in case of the vessel touching the ground these hawsers may be run out from a boat with the greatest ease (where it is practically impossible to run out a heavy chain) and readily shackled to an anchor, and while the steam is up taken to the windlass or capstan ready to heave the vessel off.

THE AUTOMATIC SHIP VENTILATOR is an apparatus for ventilating ships depending for its motive force upon the rolling of the vessel. Two cylinders are placed, one on each side of the ship, and are connected by a 'thwartship pipe, which, when the vessel is upright, is filled with water. Each cylinder has connected with it an indraw pipe from the hold, and an outlet pipe through the top side. When the vessel begins to roll, the water rushes into the cylinder on the low side of the ship, causing a vacuum in the other, which is filled by foul air from the hold. Check-

valves prevent the air rushing back in any case, so that when the ship rolls back the water rushes into the second cylinder, expelling the foul air with which it is filled, and at the same time causing a vacuum in the first cylinder. By fitting a duplicate apparatus, and filling the horizontal tube in one with mercury, instead of water, the invention is used for pumping out the bilge. The apparatus has been tried on board H.M.S. *Vigilant*, it is said, with much success. If it proves to be generally applicable to merchant vessels, it will be of special value in the case of such cargoes as coal, petroleum, grain, &c. The Automatic Ship Ventilator is made to blow its own trumpet, fog-horns being attached to the outlet for the foul air.—Messrs. Mosses and Mitchell, 55, Gracechurch Street, London.

ALLAN'S IMPROVEMENTS IN DRILLING MACHINES.—The object of this invention is to enable boiler-plates to be easily drilled by steam power when in their place on the boiler. An annular bed-plate forms the base of the machine, having a toothed rack round its outer boundary. The movable table on which each drilling machine is carried has a pinion wheel, by which it can be turned, and made to take up any position round the circumference of the rack. By another arrangement, the drilling-engine can be moved up or down, and it can also be moved in or out upon radii of the annular base. Steam is supplied by elastic piping. The object of the inventor is “the employment of direct steam-driven drilling-machines free to be moved round a fixed circular bed for drilling boiler shell-plates, or similar work when in a vertical position.”—W. Allan, engineer, Sunderland.

LIGHT AND HEAT COLLECTOR.

IT is tolerably well known to most of our readers that the apparatus at present used in our lighthouses for transmitting light on to the sea for the purpose of guiding and warning the mariner, is of a very elaborate character, and most efficient in its results. By the careful adjustment of glass lenses and prisms built up around the flame, the issuing rays of light are made the most of, those which, for the purposes of the mariner, would otherwise be wasted in an upward or downward direction, are caught by upper and lower prisms, and refracted or bent so as to be sent out on to the sea in a direction parallel to the rays emerging from the central lenticular belt. The great efficiency of this arrangement of glass lenses and prisms has long been acknowledged in all parts of the world, and to Messrs. Chance, the

eminent glass manufacturers of Birmingham, belongs the chief credit of developing this form of lighthouse apparatus, originally conceived by Augustine Fresnel, to its present condition of usefulness.

An Italian Professor, Signor Balestrieri, has, however, invented a new arrangement, by which the same, or even superior results, are claimed to be obtained by a simpler and more economical method than that now in operation with glass lenses and prisms, and this novel apparatus we have recently had an opportunity of inspecting. It will, perhaps, be better understood by our readers, if we state that the principle of the new arrangement consists chiefly in anterior reflection, the reflectors being a series of metallic annular belts, or conical segments, so adjusted as to receive at a certain angle on their polished surfaces, 180° of the light radiating from a luminous body placed in focus behind it. The rays of light are therefore sent out at the same angle as that at which they strike the reflecting surface, and each ring is so adjusted, that all the impinging rays are reflected outwards in a direction parallel to each other, thus forming a compact horizontal shaft of light to be sent out to the sea horizon, similar to the beam which issues from a lenticular apparatus. The effect, as witnessed by us, was exceedingly fine, and we venture to think that there is a successful future open to this simple and efficient apparatus. Its cheapness, as compared with the cost of glass lenses, is very much in its favour, and no doubt Colonial authorities who wish to light their coasts efficiently and economically, will gladly obtain this metallic apparatus rather than the beautiful but costly glass. We would commend to the inventor the desirability of forthwith applying the new apparatus for ships' lights, it seems to us to be admirably adapted for such a purpose. For the lights on railway trains and semaphore signals it would also, we think, be invaluable, and we shall look forward with hope to hearing of its successful application for all the purposes we have mentioned. In addition to collecting light, the apparatus can be adapted for collecting heat and sending it out in any given direction.

SHIPS' COMPASSES.

(Communicated by a Manufacturer.)



RESPECTING the many serious calamities which result in the sacrifice of both life and property at sea, amongst the numerous causes there is one great fault which has hitherto escaped the attention of those interested in the Mercantile Marine. In the first place, I wish to mention the manner in which

new ships are fitted out with nautical instruments, compasses, &c. Where quality has no place for consideration, this branch of business being supplied by estimate, the lowest price quoted having the preference for supplying these instruments, which in many cases are not even third class, and are put on board ships which would not keep in order for a week at sea. Secondly, I wish to call attention to the position in which they are placed on board ; in many cases the wheelhouses are so miserably small that the compass is so close to the steering gear that there is not room for a person to pass between the wheel and the binnacle, the horizontal iron spindle which passes through the centre of the wheel being on a level with the compass card, together with the other iron fittings attached to the steering gear, often causing a greater magnetic disturbance than the whole ship itself. Next, as regards the standard compass, which is of still more consequence, in every case it is placed to suit the builder or owners according to their ideas ; at the same time, if they were to consult the practical adjuster with the aid of his testing apparatus, he would be able to point out the best position for the standard compass—that is to say, the part of the ship where there is the least magnetic disturbance ; but in this most important matter attending the welfare of the ship, it is the last of all things thought of, cheapness being the principal thing aimed at. For instance, I have seen many vessels from 10 to 1,600 tons with compasses which I am sure could be purchased in any shop from 14s. to 16s. each, which may answer the purpose for a fishing boat, but for ships going a twelve or eighteen months' voyage the thing is perfectly absurd, as any person knowing anything whatever about magnetism must admit that the compasses of an iron vessel should be a much superior made article to those on board wooden vessels. Again, as regards the adjusting of these vessels in many of the northern ports—Liverpool is one of the worst—the adjuster is sent for at a minute's notice to correct the compasses, and when he arrives, he will find as many as six or seven large iron vessels in the same dock in which he has to swing his vessel, and I distinctly say that all attempts to adjust compasses under such circumstances are simply ridiculous. On account of the great amount of local attraction in London, it is quite the reverse, as every iron vessel is taken to a place near Gravesend, entirely set apart for that purpose, and sufficient time is given to adjust the compasses satisfactorily ; but in Liverpool I have seen vessels which had to go through the ordeal of adjusting as they were leaving the dock and going right off to sea.

SHIPBUILDING, 1875.

STEAMSHIPS.

Ports.	No. of Ships first six months.	No. of Ships added in July, August, Sept. & October.	Gross Tonnage first six months.	Gross Ton. added in July, August, Sept. & October.
Glasgow ...	52	80	50,760	21,053
Greenock ...	11	8	18,998	7,279
Port Glasgow	18	12	8,088	5,269
Sunderland	12	15	15,522	14,813
Newcastle	21	14	24,433	13,803
North Shields	5	3	3,118	254
South Shields	8	8	3,095	2,275
Liverpool ...	5	8	4,127	6,345
Dundee ...	6	3	3,276	1,952
Hartlepool	11	2	12,399	2,739
Aberdeen ...	2	1	1,357	643
London ...	9	8	4,088	2,607
Belfast ...	—	—	—	—
Stockton	4	3	4,832	3,161
Kirkcaldy ...	—	—	—	—
Middlesbro'	8	2	8,657	2,309
Hull ...	1	3	3,110	4,063
Leith ...	—	1	—	72
Bo'ness ...	2	—	1,841	—
Whitehaven	1	—	232	—
Barrow ...	1	1	1,025	1,063
Whitby ...	4	1	4,602	1,006
Other Ports	17	10	1,906	2,684
Total	198	138	170,406	93,411

SHIPBUILDING, 1875.

SAILING SHIPS.

Ports.	No. of Ships first six months.	No. of Ships added in July, August, Sept. & October.	Gross Tonnage first six months.	Gross Ton. added in July, August, Sept. & October.
Aberdeen ...	5	1	2,815	1,677
Barrow ...	5	1	4,685	1,885
Belfast ...	4	3	4,858	2,944
Bristol ...	—	—	—	—
Cowes ...	4	2	874	35
Dartmouth ...	18	6	1,568	665
Dundee ...	6	1	5,249	1,158
Faversham ...	1	1	89	27
Glasgow ...	29	32	81,267	28,598
Greenock ...	18	3	9,072	3,147
Hull ...	9	5	645	328
Jersey ...	9	5	818	374
Liverpool ...	12	18	6,747	7,367
London ...	8	10	853	2,749
Middlesbro' ...	1	1	182	650
Newcastle ...	8	6	738	3,580
Plymouth ...	7	4	1,314	361
Port Glasgow ...	9	6	9,006	6,629
Portsmouth ...	8	1	381	105
Rochester ...	6	2	282	92
Southampton ...	7	1	521	66
Stockton ...	2	2	2,594	2,610
Sunderland ...	28	19	20,684	16,284
Whitehaven ...	2	3	2,255	2,907
Workington ...	1	2	1,069	1,260
Yarmouth ...	5	15	145	1,047
Other Ports ...	96	67	13,077	7,464
Total	293	212	120,138	93,499

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
262	SOUTH AMERICA—West Coast—Ecuador— Emeralda River	Discontinuance of Light.
263	ADRIATIC—Fiume—	Alteration in Leading Lights.
264	ADRIATIC—Pelagos Island	Alteration in Light.
265	ST. LAWRENCE RIVER—North Channel Traverse	Establishment of Leading Lights.
266	UNITED STATES—Massachusetts—Long Point Lighthouse	Establishment of Fog-Signal.
267	WEST INDIES—Bahamas—New Providence— Athol Island	Re-establishment of Light.
268	WEST INDIES—Cay Lobos	Alteration in colour of Lighthouse.
269	MEDITERRANEAN—Algeria—Bougie	Alteration in Harbour Light.
270	CORSICA—Bastia—St. Nicholas	Alteration in Pier Light.
271	GULF OF BOTENIA—Skal Grund Island—Kaskö	Establishment of a Light.
272	GULF OF BOTENIA—Uleaborg	Establishment of a Beacon-vessel.
273	HINDOSTAN—West Coast—Cadiapatam	Establishment of a Light.
274	HINDOSTAN—West Coast—Malwan Rock	Position of Rock and Clearing Marks.
275	ENGLAND—South Coast—Dungeness—East Bay	Extended Limit of Red Light.
276	UNITED STATES—Delaware—Mahon River	Establishment of a New Light and discontinuance of Old Light.
277	UNITED STATES—Massachusetts—Pollock Rip Light-vessel	Establishment of a Fog-Signal.
278	MEDITERRANEAN—Spain—Tarragona	Establishment of Light on West Mole.
279	RIVER THAMES ENTRANCE—Maplin Lighthouse	Exhibition of white strip of Light.
280	WEST INDIES—Antigua—Sandy Island	Establishment of a Light.
281	SOUTH AMERICA—Venezuela—Cumarebo Bay	Note on Light Exhibited.
282	SOUTH AMERICA—Venezuela—Los Roques	Visibility of El Roque Light.
283	SOUTH AMERICA—Venezuela—Orchilla Island	Reported Light.
284	AUSTRALIA—East Coast—Capricorn and Bunker Islands	Alteration in position.
285	ADRIATIC—Port Umago	Establishment of Harbour Light.
286	IRELAND—North Coast—Lough Swilly—Dunree Head	Intended establishment of a Light.
287	IRELAND—North Coast—Lough Swilly— Buncrana Pier	Intended establishment of a Light.
288	UNITED STATES—Chesapeake Bay—Thomas Point	Establishment of a New Light and discontinuance of Old Light.
289	UNITED STATES—Chesapeake Bay—Love Point	Alteration in Light.
290	AFRICA—West Coast—Benguela	Light exhibited from the Fort.
291	UNITED STATES—Maine—Machias Bay—Avery Rock	Establishment of a Light.
292	UNITED STATES—Maine—Frenchman Bay—Egg Rock	Establishment of a Light.
293	UNITED STATES—Florida—Amelia Island	Alteration in colour of Front Beacon, South Range.
294	CHINA—East Coast—San-Mun Bay	Position of Heroine Rock.
295	EASTERN ARCHIPELAGO—Bawean Island	Discovery of a Sunken Rock.
296	INDIA—West Coast—Kattywar Dwarka	Light Exhibited.
297	CALIFORNIA—San Francisco—Yerba Buena Island	Establishment of a Light.
298	PORTUGAL—Cape Roca Light	Alteration in Light.

NAUTICAL NOTICES.

262.—SOUTH AMERICA.—*West Coast.*—*Ecuador.*—*Esmeralda River.*—The present light on Coquito point, entrance to Esmeralda river, has been discontinued, pending the removal of the lighthouse to Mount Coquito.

263.—ADRIATIC.—*Fiume.*—With reference to Nautical Notice, No. 179 (August, 1875), on the lights marking the breakwater at Fiume, in consequence of the progress of the harbour works, the entrance to the port is now marked by two lights, one stationary, the other floating. 1. A *fixed red light*, exhibited from a wooden building on the breakwater, elevated 33 feet above the sea, and should be seen 10 miles. 2. A *light-vessel*, west of the stationary light, from which a *red light* and a *white light* are exhibited on the same mast, the red light elevated 20 feet above the sea, and the white light 15 feet above the sea; they should be seen from a distance of about 2 miles. The vessel is painted in red and white bands. By day, the light-vessel carries a ball at the mast head. In stormy weather the stationary light cannot be exhibited.

Note.—All vessels should pass westward of the light-vessel, and not attempt to pass between the lights.

264.—ADRIATIC.—*Pelagosa Island.*—With reference to Nautical Notice, No. 245 (November, 1875), on the intended exhibition of a light on Pelagosa Island, further notice has been received that the light is now exhibited, and that the light is a *fixed white light* of the first order, varied by a *flash every minute*, not every half minute as stated in the above-named notice.

265.—ST. LAWRENCE RIVER.—*North Channel Traverse.*—The following lights are now exhibited to lead through the Traverse of the North Channel, viz.:—1. Two lights at St. Francis, east end of the island of Orleans, to lead between the West Sands and the Traverse Spit. The upper light is elevated 110 feet above high water, the tower being 30 feet high. The lower light is 1,379 yards from the upper light, and is elevated 30 feet above high water, the tower being 28 feet high. Both lights are *fixed white lights*. Position of upper light, lat. $47^{\circ} 0' 12''$ N., long. $70^{\circ} 45' 19''$ W. 2. Two lights at Cape Rouge, to lead between the Traverse Spit and the Brule Bank. The upper light is elevated 230 feet above high water, the tower being 34 feet high. The lower light is 100 yards from the upper light, and is elevated 170 feet above high water, the tower being 24 feet high. Both lights are *fixed white lights*. Position of the upper light, lat. $47^{\circ} 7' 45''$ N., long. $70^{\circ} 40' 28''$ W. In clear weather the above lights should be seen from a distance of 10 miles.

266.—UNITED STATES.—*Massachusetts.*—*Long Point Lighthouse.*—

A fog-bell, worked by machinery, has been established close to the north side of Long Point lighthouse, Cape Cod. In thick or foggy weather, the bell will give *two* strokes in quick succession, followed by an interval of *thirty seconds*, then *one* stroke followed by an interval of *thirty seconds*.

267.—WEST INDIES.—*Bahamas*.—*New Providence*.—*Athol Island*.—A light is now exhibited from the cupola of the Quarantine officers dwelling on Athol Island, to light the eastern approach to Nassau harbour. The light is a *fixed white* light, visible between the bearings of W. by N. $\frac{1}{2}$ N. and N.N.W. $\frac{1}{2}$ W. It should be seen 8 miles.

268.—WEST INDIES.—*Cay Lobos*.—Intimation has been received that it is intended to paint the Cay Lobos lighthouse in horizontal bands of *black and white* instead of red and white.

269.—MEDITERRANEAN.—*Algeria*.—*Bougie*.—The following alteration has been made in the harbour light at Bougie, viz. :—A light is exhibited from a small house on the extremity of Abd-el-Kader pier. The light is a *fixed red* light elevated 28 feet above the sea, and should be seen 8 miles. Also, that the light hitherto exhibited from Abd-el-Kader fort has been discontinued.

270.—CORSIKA.—*Bastia*.—*St. Nicholas*.—The colour of the temporary light, marking the extremity of the pier in course of construction at Pott St. Nicholas, has been changed from white to *red*, in order to distinguish it from the lights of the town. The light should be seen 4 miles.

271.—GULF OF BOTHNIA.—*Skal Grund Island*.—*Kaskö*.—A light is now exhibited from a lighthouse recently erected at Kaskö, Skal Grund island. The light is a *fixed and flashing red* light, the flash being seen *every thirty seconds*; it is elevated 108 feet above the sea, and should be seen 16 miles. The illuminating apparatus is of the third order. The lighthouse, 86 feet high, is round and painted white; the wall surrounding it is red. Position, lat. $62^{\circ} 20' N.$, long. $21^{\circ} 11' E.$

272.—GULF OF BOTHNIA.—*Uleaborg*.—A beacon vessel has been moored in the channel between Karlö and the shoal of Veli Kelmi, in $4\frac{1}{2}$ fathoms water, and W. $\frac{1}{4}$ N. from the lighthouse of Uleaborg. The vessel is painted red, and has the name of *Portprick* on her sides. She has one mast, and carries a small red ball at the masthead. Vessels can pass on either side of the beacon vessel, and pilots are generally found in the neighbourhood. Position, lat. $65^{\circ} 2' 40'' N.$, long. $24^{\circ} 29' 40'' E.$

273.—HINDOSTAN.—*West Coast*.—*Cadiapatam*.—A light is now exhibited from a tower erected on Cadiapatam or Mutum point. The light is a *fixed white* light, elevated 85 feet above the sea, and should be seen 12 miles. The tower, 16 feet high, is situated on the point, and from it Crocodile rock bears S.W. $\frac{1}{4}$ S., distant $2\frac{1}{2}$ miles. Position, lat. $8^{\circ} 7' 30'' N.$, long. $77^{\circ} 18' E.$

274.—HINDOSTAN.—*West Coast*.—*Malwan Rock*.—The following infor-

mation has been received relative to the position of Malwan rock, viz. :—From the rock Vingarla rocks lighthouse bears S. $\frac{1}{4}$ E., easterly, 8 miles. Square rock S.S.E. $\frac{1}{2}$ E., $2\frac{1}{2}$ miles. Koora rocky islet N. $\frac{1}{4}$ E., easterly, $4\frac{1}{2}$ miles.

Clearing Marks.—To pass outside or westward of the rock: Square rock in line with Nuti point, leads half a mile to the south-westward; and Koora rocky islet should not be brought to bear to the northward of N.N.E.

By Night.—Vingarla rocks light must not be brought to bear to the southward of S.S.E., nor should a vessel approach the rock within a depth of 15 fathoms.

275.—ENGLAND.—*South Coast.*—*Dungeness.*—The following alteration has been made in the limit of the red sector of light of Dungeness light, seen from East bay, viz. :—The red light is now visible from the bearing of S.W. by W. $\frac{1}{2}$ W. in to the land.

276.—UNITED STATES.—*Delaware.*—*Mahon River.*—A light is now exhibited from a lighthouse near the mouth of Mahon river, west side of Delaware bay, and bearing N. by E. $\frac{3}{4}$ E., distant 660 yards from the old lighthouse. The light is a *fixed white* light of the fifth order, elevated 53 feet above high water, and should be seen 13 miles. The tower is attached to the keeper's dwelling, and both are painted a buff colour. Approximate position, lat. $39^{\circ} 10' 30''$ N., long. $75^{\circ} 24' 15''$ W. The light hitherto exhibited at the entrance of Mahon river has been discontinued.

277.—UNITED STATES.—*Massachusetts.*—*Pollock Rip Light-Vessel.*—A steam fog-whistle has been established on board the Pollock Rip light-vessel, off Monomoy island. In thick or foggy weather the whistle will give, during each minute, a blast of *five seconds'* duration, followed by an interval of *twenty-two seconds*, then a blast of *three seconds'* duration, followed by an interval of *thirty seconds*.

278.—MEDITERRANEAN.—*Spain.*—*Tarragona.*—A *green* light is exhibited at the extremity of the west or inner mole, now in the course of construction at Tarragona.

279.—RIVER THAMES ENTRANCE.—*Maplin Lighthouse.*—With reference to Nautical Notice, No. 146 (June, 1875), on the intended exhibition of a strip of white light to mark the Maplin spit buoy, the strip of white light is now exhibited from a window 13 feet below the lantern, on a bearing of N.W. by W. $\frac{3}{4}$ W., marking the Maplin spit buoy.

280.—WEST INDIES.—*Antigua.*—*Sandy Island.*—A light is now exhibited from a lighthouse on Sandy island, off St. John harbour, Antigua. The light is a *fixed white* light, elevated 56 feet above the sea, and should be seen 13 miles. The lighthouse, 53 feet high, is an open wooden structure, painted black. Position, lat. $17^{\circ} 6' 50''$ N., long. $61^{\circ} 54' 30''$ W.

Note.—The light kept on the bearing of S.S.W. clears the Diamond bank, and when kept bearing N. by E. clears the Hurst and Irish banks and the shoals to the southward.

281.—SOUTH AMERICA.—*Venezuela.*—*Cumarebo Bay.*—Information has been received that the light exhibited at Cumarebo bay is not an established light, but one exhibited for private purposes, and its exhibition uncertain.

282.—SOUTH AMERICA.—*Venezuela.*—*El Roque Light.*—With reference to Nautical Notice, No. 215 (October, 1875), on the exhibition of a light on El Roque island, information has been received that a smaller lamp having been substituted for the one originally intended for the lighthouse, the light is said to be seen only 15 miles instead of 18 miles, as stated in that Notice.

283.—SOUTH AMERICA.—*Venezuela.*—*Orchilla Island.*—Information has also been received that a fixed light is now exhibited on Orchilla island. Particulars of the position or the distance visible have not yet been received.

284.—AUSTRALIA.—*East Coast.*—*Capricorn and Bunker Islands.*—From information transmitted by Staff-Commander E. P. Bedwell, R.N., the Capricorn and Bunker groups have been found to lie further to the west, and thus closer to the mainland, than previously supposed.

Capricorn Group.—*Masthead Island* (west point) lies east 27 miles from Cape Capricorn, and in lat. $23^{\circ} 38' S.$, long. $151^{\circ} 44' E.$ This position is $2\frac{1}{2}$ miles W.S.W. of the position formerly assigned to the island (the other islands of the group being similarly affected in position). In order to clear the extensive detached coral reef, the western extreme of which lies W.S.W. $4\frac{1}{2}$ miles from Masthead island, and also to clear Irving reef, which lies W. $\frac{1}{2}$ S. $5\frac{1}{2}$ miles from Masthead island, the beach of Masthead island should not be raised above the horizon. The ebb tide out of Keppel bay sets direct towards Masthead island.

Bunker Group.—*No. 1 Island.*—Also, that No. 1 Bunker island lies in lat. $23^{\circ} 54\frac{1}{2}' S.$, long. $152^{\circ} 24\frac{1}{2}' E.$, which would place the island (in common with the others of the group) about $1\frac{1}{2}$ miles to the westward of its hitherto charted position.

285.—ADRIATIC.—*Port Umago.*—A fixed green light is now exhibited at the extremity of the mole, which should be seen five miles.

286.—IRELAND.—*North Coast.*—*Lough Swilly.*—*Dunree Head.*—On the 15th January, 1876, a light will be exhibited from a lantern attached to a dwelling-house on Dunree head, Lough Swilly. The light will be a fixed white light of the third order, visible between the bearings of S.S.W. $\frac{1}{2}$ W., through east, and N. $\frac{1}{2}$ W., elevated 150 feet above high water, and should be seen 13 miles. The situation of the dwelling-house to which the lantern is attached is N.E. $\frac{1}{2}$ N., 133.

yards from Dunree fort. Position, lat. $55^{\circ} 11' 50''$ N., long. $7^{\circ} 33' 10''$ W.

Note.—Vessels passing Dunree head must give it a wide berth to clear the Dunree Skelligs reefs, which lie S.W. by W. $\frac{1}{2}$ W. $1\frac{1}{2}$ cables from the south-west part of the head.

287.—IRELAND.—*North Coast.*—*Lough Swilly.*—*Buncrana.*—On the 15th January, 1876, a small *red* light, visible between the bearings of S. by E. $\frac{1}{2}$ E., through east, and E. by N. $\frac{1}{4}$ N., will be exhibited from a pillar on the pier recently erected at Buncrana, as a guide to the anchorage in the bay.

288.—UNITED STATES.—*Chesapeake Bay.*—*Thomas Point.*—A light is now exhibited from a screw pile lighthouse, erected on Thomas point shoal. The light is a *flashing red* light of the third order, the flash being seen *every twenty seconds*; it is elevated 42 feet above high water, and should be seen 12 miles. The lighthouse is hexagonal in shape. The iron-work and roof are painted brown and the dwelling white. The lighthouse is situated E. by S. $\frac{3}{4}$ S., distant 1 mile from Thomas point. Approximate position, lat. $38^{\circ} 54' 10''$ N., long. $76^{\circ} 25' 40''$ W. In thick or foggy weather a bell, struck by machinery, will give *three strokes* in quick succession, at intervals of *thirty seconds*. The light heretofore exhibited on Thomas point has been discontinued.

289.—UNITED STATES.—*Chesapeake Bay.*—*Love Point.*—The following alteration has been made in the light exhibited off Love point, entrance to Chester river. The light has been changed from a *flashing red* light of the third order to a *fixed white* light of the *fifth* order.

290.—AFRICA.—*West Coast.*—*Benguela.*—A *fixed white* light is exhibited from the fort at Benguela, which should be seen 5 miles.

291.—UNITED STATES.—*Maine.*—*Machias Bay.*—*Avery Rock.*—A light is now exhibited from a lighthouse on the south end of Avery rock. The light is a *fixed red* light of the *fifth* order, elevated 59 feet above high water, and should be seen 13 miles. The tower, 36 feet high, is square, rises from the centre of the keeper's dwelling, and is painted white. From the lighthouse, Libby island lighthouse bears S.W. by S., distant $5\frac{1}{2}$ miles. Position, lat. $44^{\circ} 39'$ N., long. $67^{\circ} 21'$ W. In thick or foggy weather a bell will be sounded, thus :—*One blow* and *two blows* alternately, at *intervals of thirty seconds*.

292.—UNITED STATES.—*Maine.*—*Frenchman Bay.*—*Egg Rock.*—A light is now exhibited from a lighthouse on the highest part of Egg rock. The light is a *fixed red* light of the *fifth* order, elevated 67 feet above high water, and should be seen 14 miles. The tower, 36 feet high, is square in form, rises from the centre of the keeper's dwelling, and is painted white. Position, lat. $44^{\circ} 21' 15''$ N., long. $68^{\circ} 8'$ W. In thick or foggy weather a bell will be sounded, thus :—*One blow*, and *two blows*, alternately, at *intervals of thirty seconds*.

298.—UNITED STATES.—*Florida*.—*Amelia Island*.—The front beacon of the south range has been painted *black* instead of brown and white, as heretofore.

294.—CHINA.—*East Coast*.—*San-Mun Bay*.—With reference to the several positions hitherto assigned to the sunken *Heroine* rock, at the entrance to San-Mun bay, the following particulars have been received—viz., Commander E. O. Matthews, U.S.N., when on the passage from Ning-po to Foochow, observed the sea breaking heavily on the Heroine rock, boats were lowered, and soundings taken as near the danger as possible, 8 to 9 fathoms being found. The following bearings were taken—viz., South end of Sanchesan (Triple island), W. $\frac{1}{3}$ S.; South-west end of Lea-ming island, N.W. by W. $\frac{3}{4}$ W.; West extreme of Montague island, N. $\frac{3}{4}$ E. Soundings were also taken over the several positions of the Heroine rock marked on the charts, but no indication of dangers was found; the native fishermen further stated that only one sunken rock exists in the locality.

295.—EASTERN ARCHIPELAGO.—*Bawean Island*.—Information has been received from Mr. George Butchard, Master of the s.s. *Milton*, that his vessel struck on a sunken danger about 4 miles westward of Bawean island. This danger (*Milton rock*) was found to consist of coral, to extend about 270 yards in a N.W. and S.E. direction, and to have 16 feet on its shoalest part, deepening all round to $4\frac{1}{2}$ and 6 fathoms, and then to 18 fathoms. The following bearings for the position of this danger are given by Mr. Butchard:—South-west point of Bawean island, S.E. by E.; North point of Bawean island (Tienio point), N.E. by E.; Small islet (Nusa), N.E. $\frac{1}{4}$ N. These bearings place the rock in lat. $5^{\circ} 44' S.$, long. $112^{\circ} 38' E.$

296.—INDIA.—*West Coast*.—*Kattywar*.—*Dwarka*.—A light is exhibited from a lighthouse at Dwarka point, Kattywar coast. The light is a *fixed white* light, elevated 70 feet above high water, and should be seen 10 miles. The lighthouse, 40 feet high, is a square stone building, situated 117 yards within the high-water line. Position, lat. $22^{\circ} 14' N.$, long. $68^{\circ} 57' E.$

297.—CALIFORNIA.—*San Francisco*.—*Yerba Buena Island*.—A light is now exhibited from a lighthouse recently erected on the south-east point of Yerba Buena island, San Francisco harbour. The light is a *fixed white* light of the fifth order, elevated 98 feet above high water, and should be seen 15 miles. The lighthouse, 21 feet high, is built of wood, hexagonal in shape, and painted light brown. Position, lat. $37^{\circ} 48' 15" N.$, long. $122^{\circ} 21' 45" W.$ Also, with reference to Nautical Notice, No. 55 (February, 1875), on the establishment of a fog-bell on the south-east end of Yerba Buena, in thick or foggy weather a steam fog-whistle will be sounded for *four seconds* at intervals of *sixteen seconds*. When fogs set in

very suddenly a bell will be rung at intervals of *ten seconds*, until the steam is up to work the whistle.

298.—PORTUGAL.—*Cape Roca Light*.—Information has been received from the Portuguese Government that the *red flash* of the revolving light at Cape Roca has for some time been 'discontinued, and that the light shows a *bright flash every minute and three quarters*.

HYDROGRAPHIC NOTICES PUBLISHED BY THE ADMIRALTY.

No. 32.—*Japan*.—Information relating to sunken dangers on the coasts of Japan, hitherto unmarked on the charts. By Captain H. C. St. John, R.N., 1875.

CHARTS, &c., Published by the Hydrographic Office, Admiralty, to the end of November, 1875, and sold by the Agent, J. D. Potter, 31, Poultry; and 11, King Street, Tower Hill.

No.	Scale.		a.	d.
1166	m = 2·3	England, West Coast :—Pyll-du-Head to Worms Head	2	6
268	m = 0·82	Labrador :—Cape St. Charles to Sandwich Bay, with Plans	2	6
103	m = 3·0	Fiji Islands :—Ngaloa and Koro Leva Harbours, Kandavu	1	6
1848	m = 7·0	Spain; South Coast :—Port Malaga	1	0
226	m = 6·0	Labrador :—Domino Run	1	6
690	m = $\left\{ \begin{array}{l} 1·0 \\ 3·0 \end{array} \right\}$	Africa, East Coast :—Cape Delgado to Mikindani Bay, with Plan of Msimbati Anchorage	2	6
1492	m = 5·75	Adriatic :—Brindisi Harbour	2	0
251	m = 2·0	Labrador :—Curlew Harbour and Approaches	1	6
P		Pacific Ocean :—Index Sheet	0	6
D		North Sea and Baltic :—Index Sheet	0	6

GRAIN CARGOES.

Just as we are going to press, the following letter appears in the *Times*, for which we are glad to find room in our pages :—

“ Board of Trade (Marine Department),

“ Whitehall Gardens, S.W., Nov. 23.

“ Sir,—I am directed by the Board of Trade to make the following reply to your letter of the 5th of November, on the subject of grain cargoes, addressed to Lord Derby, which has been forwarded by his Lordship to the Board of Trade, and of which you have sent a copy to the President of the Board of Trade.

“ In the first place the Board of Trade desire to call attention to the language of the 3rd Section of the Act of last Session on the subject. It is provided by that Section that, ‘after the 1st of October, 1875, no cargo of which more than one-third consists of grain shall be carried on board any British ship, unless such grain be contained in bags, sacks, or barrels, or secured from shifting by boards, bulkheads or otherwise.’

“ On the 2nd of September, a Circular was issued by Her Majesty’s Government to Her Majesty’s Consular officers, at grain-loading ports, to the following effect :—

“ ‘ Foreign Office, Sept. 2, 1875.

“ ‘ (Circular—Commercial.)

“ ‘ I am directed by the Earl of Derby to transmit to you copies of the Merchant Shipping Act, 1875, and I am to call your particular attention, and that of all Vice-Consuls in your jurisdiction to its provisions, more especially to those of the 3rd Section relating to the carriage of grain and other seeds, or nuts, in British ships.

“ I am further to instruct you to report immediately to the Board of Trade any case in which grain, &c., is shipped in British vessels in contravention of the Act, and in such manner as to endanger human life.’

“ After the receipt of your letter and of an application from the Consul at Copenhagen for further instructions, the following telegram was, on the 20th of November, sent to Her Majesty’s Consuls at grain-loading ports :—

“ ‘ You may spend a reasonable sum in obtaining such help as is necessary to enable you to make the report required by Circular from the Foreign Office of the 2nd of September last. Instructions will follow.’

“ On the 22nd of November the following instructions were sent to the same Consuls :—

“ ‘ Instructions to Consuls.—Grain Cargoes, Merchant Shipping Act, 1875.

“ ‘ 1. The following telegram was dispatched this day to Consuls at certain ports by the Board of Trade, viz. :—

“ ‘ You may spend a reasonable sum in obtaining such help as is necessary to enable you to make the report required by Circular from the Foreign Office of the 2nd September last. Instructions will follow.’

“ ‘ 2. In order to enable the Consul to make the report required by the Circular referred to in the telegram, he is authorized to obtain the assistance of some competent person and to pay him for his services at such rate as he finds necessary, not exceeding £2 for each ship reported on.

“ ‘ 3. The Consul will report at once whom he employs, giving his name and qualifications, at what rate he pays him, and what the Consul's estimate of the whole cost for the financial year will be.

“ ‘ 4. The Act does not give Consuls any power to control the loading of ships, and the Circular above referred to requires them, accordingly, only to report whether the Act is obeyed—in other words, to report whether in ships having a cargo of which more than one-third consists of grain the grain is contained in bags, sacks, or barrels, or secured from shifting by boards, bulkheads, or any, and by what, other means.

“ ‘ 5. The Consul should make his reports to the Board of Trade at the end of each calendar month.

“ ‘ T. H. FARREB, Secretary.

“ ‘ Thomas Gray, Assistant Secretary.’

“ ‘ It might be sufficient to state what has been done, but there are one or two points in your letter to which the Board desire me to advert further, in order to prevent misconception.

“ ‘ You state in your letter that the 3rd Clause in the Act enacts that grain shall be loaded in sacks or properly secured by shifting boards, bulkheads, or otherwise, and you say, ‘ If the captain asks what is “properly” the Consuls cannot tell him.’ You point out the want of definite instructions to Consuls, as a proof of which you quote a formal Circular, and not the one referring to this subject which is set out above. You suggest that the Government should send out a copy of the Canadian or American rules for the guidance of Consuls in superintending the loading of grain cargoes, and you refer to the practice of Italian Consuls as a precedent to be followed.

“ ‘ Upon this I have to remark, in the first place, that the 3rd Section of the Act of 1875, which is correctly quoted at the beginning of this letter, does not contain the word ‘ properly,’ and that, as pointed out in this Circular, the Act gives no power to Her Majesty's Consuls to superintend or direct the mode in which grain cargoes shall be stowed.

“ ‘ As regards your suggestion that a copy of the Canadian or American Rules should be sent to Her Majesty's Consuls for their guidance, I am to point out that, as already stated, Her Majesty's Consuls have no power to enforce these or any other rules; and further that the circumstances of

different ports and of different trades differ so that rules which may be suitable to one trade or one part of the world may not be suitable to another.

"As regards the Italian practice, it is perfectly true, as stated in your letter, that Italy does subject her ships to an official survey upon loading, as will be seen upon reference to the reports of Her Majesty's Ministers contained in Parliamentary Papers 158 of 1873 and 133 of 1874. But it should also be remembered that Her Majesty's Minister at Rome in making this report states (page 15 of the second return) that 'he has been informed by persons of experience that the surveys or examinations required by the Italian Mercantile Marine Code to be made before ships go to sea are practically valueless as securities against overloading,' a statement which receives a remarkable illustration from the fact that in recent returns given by Lloyd's to the Board of Trade of grain-laden ships reported to have been lost between October, 1873, and October, 1875, out of 81 foreign ships so reported to have been lost, 11 were Italian, which ships must, it would seem, have sailed after an official survey and with an official certificate of seaworthiness.

"S. Plimsoll, Esq., M.P."

"I am, &c., EDWARD STANHOPE.

GENERAL.

THE RULE OF THE ROAD AT SEA.—The following appears in the *Shipping and Mercantile Gazette*:—"Sir,—Disasters at sea, even with men-of-war, will occur to the end of time. Yet many serious collisions, with loss of life, are simply caused through the want of sufficient confidence in the port helm. The 11th, 13th, and 14th Articles of the Sailing Rules are not always judiciously maintained in Courts of Law. If two steamers are meeting end on, or nearly end on, it is a mistake when some officers imagine that the law permits them to use their own discretion as to which side they may pass each other. All's well that ends well; but I hold the risk of collision would be terribly increased the moment such reckless navigation is exercised, more particularly at night, when, probably, one of these vessels, of any nation, may have the misfortune to be under the command of a nervous, undecided officer, who wavers as to the action of the helm, and who cannot make up his mind what to do, or which side to keep, until a collision, with all its horrors, becomes inevitable. It is to be remembered that steamers frequently approach each other with a combined speed of perhaps about twenty-six knots an hour; therefore, a vigilant look-out, with decisive action, is required, and the law properly says both ships, under these circumstances, must port. Still I do not advocate, neither do I believe it would be good seamanship or even necessary, that vessels at any time should attempt to make a

broad sheer across each other's course, so as to pass on the port side. But, Sir, I am decidedly of opinion, and I think you will concur, that, if two steamers are meeting nearly end on, or crossing, one showing green to the other's red light, then, undoubtedly, the green should invariably and promptly give way to the red, thus complying with the 13th and 14th Articles of the Sailing Rules, and also bearing in mind the comprehensive lines written by Mr. Thomas Gray, of the Board of Trade—namely, 'Green to green, and red to red, perfect safety, go ahead.' I have in anxious moments frequently observed a vessel when approaching a red light, shut off her own red, and dangerously open the green light, for no practical purpose whatever, but through carelessness or ignorance of the Sailing Rules, which are clear and simple to understand, and excellent for their purpose. After a collision takes place, legal inquiries are instituted, without having the salutary effect so much needed and sincerely desired to lessen disasters in the future. At all events, lawyers are carefully selected on both sides, but the vessel which may have violated the Rule of the Road, and thus caused the disaster, is exonerated by the powerful advocacy of an eloquent lawyer, whose object is, of course, professionally to protect his client's interest, and, if necessary, before the court and gentlemen of the jury who may not thoroughly understand maritime matters, he succeeds in making the right-doing ship appear wrong, and *vice versa*. This is owing entirely to the absence of skilful and modern nautical advice. Such an inquiry may be very good financially for the individual party who gains the suit, but it is seriously detrimental to the safety of life at sea, and to the international laws of navigation, inasmuch as the careful officer who had kept a well disciplined vessel is unwisely condemned, the confidence in the Sailing Rules most unwarrantably confounded, and seamanship disregarded. Consequently ships will recklessly go along, and disasters, with loss of life at sea, must follow. Though the nation may deeply regret the loss of Her Majesty's ship *Vanguard*, yet it must be greatly pleased to find that a searching investigation has been made with skill and perseverance. If such inquiries were similarly pursued in the Mercantile Marine, life and property would be better protected, and good seamanship more appreciated.—Yours, &c., S. BERTRIDGE.—Cork, Sept. 28, 1875."

ANOTHER STEAMER FOR THE CAPE.—On the 14th November, 1875, the *Dunrobin Castle*, built by Messrs. Robert Napier and Sons, and intended for Messrs. Donald Currie's South African fleet, was launched at Govan. The vessel is one of the finest steamers built upon the Clyde, and is expected to be the largest and swiftest in the Cape trade. Her dimensions are 342 feet length, 38 feet breadth, 28 feet depth, and she will register close upon 3,000. The engines, also constructed by Messrs. R. Napier and Sons, are of great power, and it is believed the passage between

England and the Cape will be made in less time than that of the *Windsor Castle* and *Edinburgh Castle*, of the same line, which have already made the passage several times in less than twenty-three days. The *Dunrobin Castle* is fitted with berths for 100 first-class passengers, fifty second-class, and 100 third-class, and the accommodation is of the most ample description, every arrangement being made on board for the comfort and convenience of passengers. The dining-room is a square saloon extending across the ship, lighted from the sides and by a cupola in the centre, securing excellent ventilation. The ladies' cabin, near the saloon, is a commodious and handsomely furnished apartment, and the state-rooms throughout are well-ventilated, and contain everything that can be required for the use of passengers. On the upper deck there are extra state-rooms and a smoking-room, and in order to prevent the inconvenience arising from cooking on the spar deck, which is common in many vessels, the galley in the *Dunrobin Castle* has been placed on the upper deck, with excellent bakery, butcher's shop, vegetable lockers, and other conveniences attached. As this vessel is intended for long voyages, there is naturally large provision for the carrying of live stock. In the centre of the vessel an extensive promenade has been provided for passengers. It will be understood, from the fact that Messrs. Donald, Currie & Co. have added this fine vessel to their fleet, that they are confident that the value of their services are recognized by the various Governments and communities in South Africa, and that in the new contract to be shortly made for the carrying of the mails, they will have a fair consideration. The necessity for competition, the rapid development of the South African commerce, the growing importance of the coast trade, and the increasing demands of emigration, all point to the importance of a just division of contract favours between two efficient lines, and old service, if good service, always deserves to be retained. From all the facts within our knowledge, we are confident that the Cape and its neighbours cannot do better than continue on equitable terms their connection with the two services. Weekly runnings, a lessened postal rate, and an equal arrangement with the two lines, should be the basis of the new contract. The *Dunrobin Castle* is expected to be ready for sea by the 20th January, and may probably take out the mails at that date. Captain Howson, so favourably known as commander of the *Windsor Castle*, is to be captain of the new steamer.

COAL FROM NEWCASTLE, NEW SOUTH WALES.—From the *Sydney Morning Herald* we learn that some important improvements are now being effected at the port of Newcastle, New South Wales, with a view to increasing the facilities for the shipment of coals. These improvements are necessitated by the development of the coal trade of New South Wales, and the British public will be somewhat astonished to find

that the Newcastle at the Antipodes is capable of shipping 12,300 tons of coal daily.

A SEAWORTHY SAILOR.—Brave, stedfast men, can do their duty without encouragement or applause, but it is right that their bravery should be acknowledged, if only with a view to provoking emulation among their weaker brethren. It is refreshing, at the present moment, when alarmists and feather-bed sailors have almost succeeded in shaking the confidence of seamen, not only in their ships but in themselves, to chronicle such an example of intrepidity as that recently displayed by Captain Adder Hansen, of the Norwegian barque *Poussin*. The barque, *Poussin*, was bound from Gefle to Antwerp with a cargo of deals and iron. She encountered heavy weather on the voyage and made much water, and on the 19th October both pumps became choked, and the sea made a complete breach over the vessel, carrying away a portion of the deck-load and doing considerable damage to the ship's side. On the 20th, the ship was steered S.W. by W., and having run between two banks, supposed to be on the Flemish Coast, the master hauled her to the wind which was from E.S.E., but there was so much water in her that she could scarcely lift herself. On the 21st the wind came from the S.W., and the vessel being full of water the crew hoisted signals of distress. A smack soon hove in sight, but the weather had then moderated a little, and the master "persuaded the crew to take the signals down," but on the smack approaching they decided to abandon the vessel, and they were taken off by the smack's boat with their baggage, leaving the gallant captain alone to his fate. He did not think it consistent with his duty to ensure his own safety by leaving his vessel, while a chance remained of saving her, and nothing daunted by the pusillanimous conduct of his crew, he shaped his course to the west in the hope of making Grimsby. The wind freshened, and the smacksmen endeavoured to persuade the captain to heave too and leave the vessel, but he still kept her head towards the west, and with much exertion succeeded in setting the fore-sail and mainsail and in lighting the binnacle lamp and side-lights. The night that followed was a fearful one for the lonely sailor. There were frequent squalls with lightning and rain, and the sea being still very high, broke on deck of the water-logged ship. The cabin was full of water which rushed from side to side as the vessel rolled, making a terrible noise. The captain still stuck to the wheel, and though he suffered greatly from exhaustion, he continued steering to the westward, until at length he was rewarded by sighting Spurn light, and soon after the crew of a pilot cutter boarded him and assisted in steering up the Humber to Grimsby. Meanwhile, the crew were landed at Yarmouth, and reported that the master had been lost with the vessel. If the English humanitarian, instead of spreading disaffection among our seamen, were to labour

to infuse into their hearts a tithe of the courage and determination of this hardy Norseman, he would be more deserving of the gratitude of his countrymen, and far more successful in lessening loss of life at sea than he has been hitherto. The panic that the English humanitarian created is more calculated to imbue sailors with fear, and to induce them to abandon their ships on the first appearance of danger, than to give them encouragement and strength in the hour of peril. We do not say that such conduct as that of Captain Hansen is unknown in our own Mercantile Marine, but we should like to see a tendency to foster and develop such a spirit of bravery, instead of crushing it under protecting and maternal legislation such as is so strongly advocated in these days.

CRIMPING BY A SHIPMASTER.—At the Cardiff Police Court, on the 8th October last, John Bourgaize, master of the Guernsey smack *Hope*, was convicted in the penalty of £5 and costs for harbouring a seaman, named Pedwin, who had deserted from another Guernsey vessel. Pedwin had been previously convicted and committed to Swansea Gaol, from whence he was brought to give evidence. It appears that he had asked the captain of the *Hope* to give him a passage, telling him at the same time what he had done. Bourgaize weakly consented and told him to keep out of sight. In consideration of these circumstances the Bench mitigated the penalty from £20, mentioned in the Act of 1854, Section 257, at the same time pointing out the fact that boarding-house keepers and crimps were frequently fined heavily for this offence; and showed that, for a master of a ship to take to such a practice would create no end of confusion, and greatly hamper the exertions made to put down "crimping." We cordially agree in the sentiments thus expressed, and we really must, in the vast interests of merchant shipping affairs, call earnestly upon masters of ships to study the law more carefully, and carry out its provisions to the letter more fully than they do. We are credibly informed that about one-half to two-thirds of the men who neglect to join ship after signing agreements, get away without being caught; and that many of them have been traced to other ships, strongly suspected to be "harboured" knowingly by the officers. Such a course is most destructive to the efforts put forth by the Board of Trade, especially in rooting out this "man stealing" business; and it appears all the more incomprehensible when it is considered that the law has been mainly enacted for the protection of shipmasters themselves.

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